

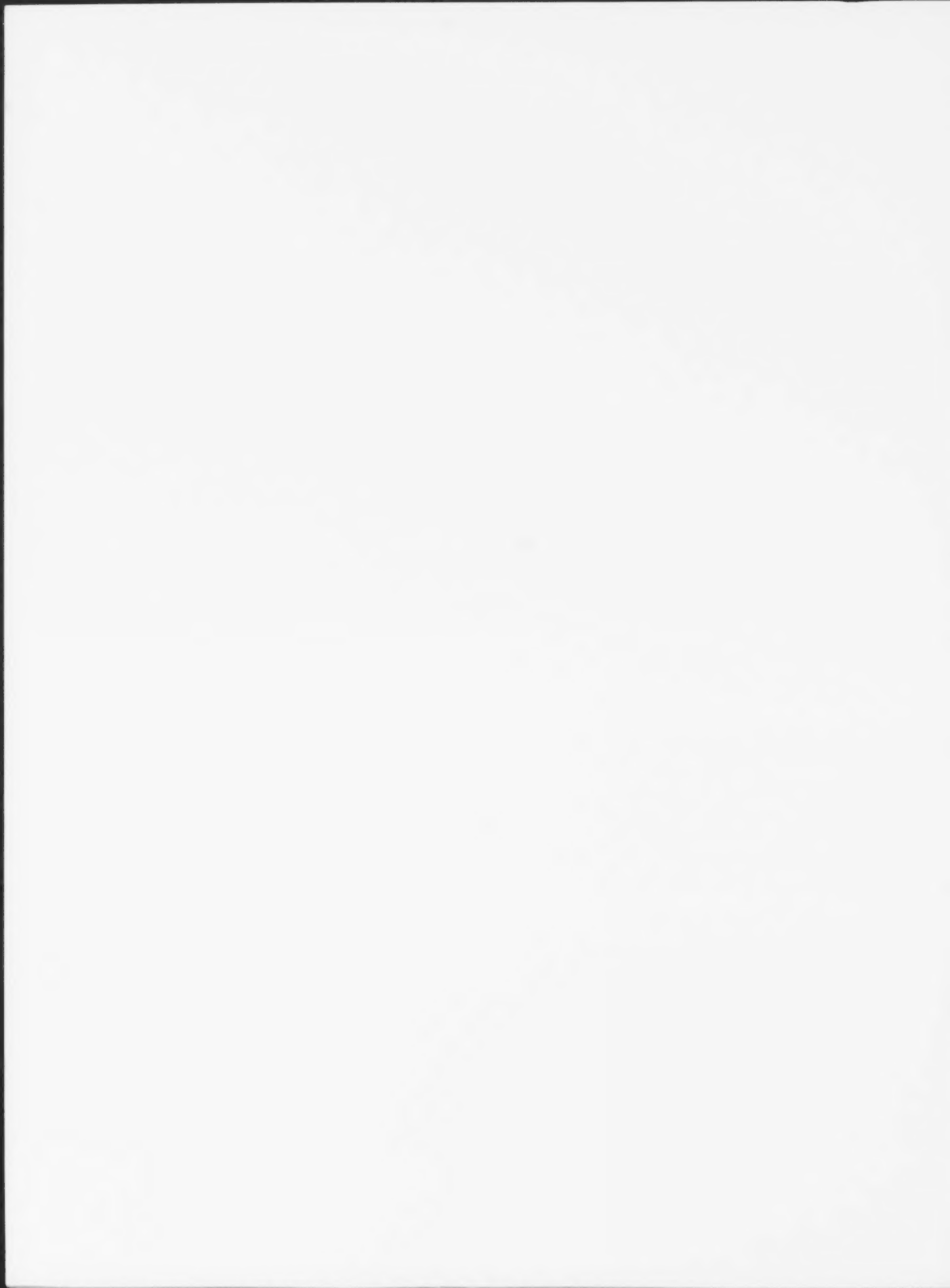


# STARTING A FARM IN ONTARIO

*Publication 61*

Ministry of Agriculture,  
Food and Rural Affairs







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## **Publication 61 Starting a Farm in Ontario**

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# Introduction

Starting a new business is always exciting and starting a new farm business is even more exhilarating. Every entrepreneur starts with an idea in their mind and there is no magic formula to what ideas will be successful. Through the uncertainties of farming, planning remains the key to managing risk and building on success.

For someone new to agriculture, planning for a farm business can be a daunting task. The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) have developed a number of resources including this publication. *Starting a Farm in Ontario* is organized in three sections.

The first section, **Starting a Farm: Where to Begin**, provides background information and ideas to consider when making the decision of whether or not to start a farm. If the decision to farm has already been made, this section gives additional considerations to support the decision.

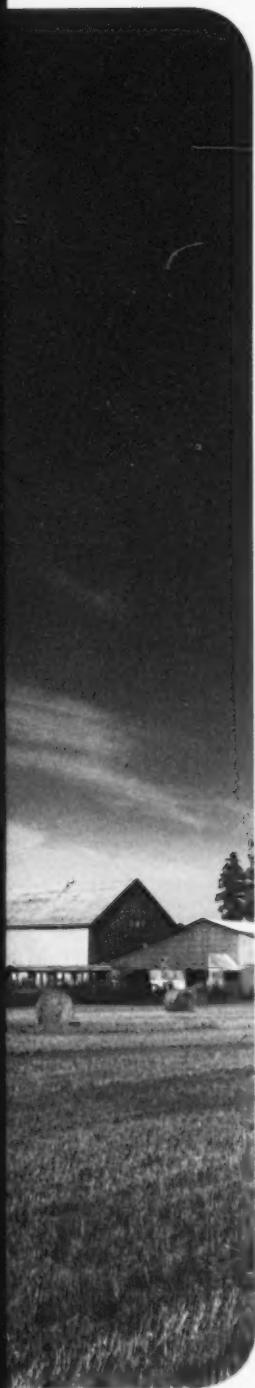
The second section, **The Decision is Made, Now What?** gives insight on things to consider before investing in a property, and discusses business planning to increase the chances of success.

The final section, **Starting a Farm 101**, provides an overview of common farm practices, with important information and resources for the farm business. Not all sections may be relevant to your unique business, but reading them all will give a good perspective of the agricultural industry in Ontario and perhaps some new ideas for the future.

Whether you are the next generation intending to take over the family farm, a recent university graduate, someone new to the country or an individual embarking on a new career, this book contains something for you. Key information is provided in the main sections of the book, with all references and website links listed at the back for easy reference.









# 1. Starting a Farm: Where to Begin

Owning a farm in Ontario offers many benefits for people seeking a different way of life or a new business venture. Farming may be a first career, a second career, a hobby or a way to spend retirement. You may have grown up on a farm or studied agriculture in school. Whatever your background or level of experience, there are many things to consider before starting a farm.

Farming is a challenging and rewarding business. Lifestyle considerations – the opportunity to work outdoors, be your own boss and raise a family on a farm – are often the strongest motivations for living and working on a farm. As a business, farming has many challenges. There are risks associated with any business start-up, and farmers also face many risks specific to agriculture – dependence on the weather, susceptibility to pests and disease, the need for large capital investments and the requirements of certain agricultural markets.

Rural living also has its challenges. For those new to the country, travel time, social isolation and the distance from urban amenities takes adjusting to. Greater distance between homes and a low population density in rural areas means services, like hydro, gas lines, road maintenance and fire and police protection are more expensive to provide on a per household basis. Water supply and sewage disposal are usually the responsibility of the homeowner.

Despite the obstacles, many people are looking to a future and livelihood in agriculture. Owning a farm or rural property in Ontario can be whatever the owners want it to be – focused on lifestyle while recovering some of the family's living expenses – or a serious business venture, rewarding its owners with a respectable living wage and satisfying returns on their investment. New entrants often think about agriculture in new and innovative ways, seizing opportunities with niche markets and value-added products to develop their farm businesses.

On most farms, the whole family is involved in the operation. Children often help with the farm work from an early age, and often take on small enterprises of their own, like raising vegetables for direct sale, or raising pigs or calves. Farm youth organizations such as 4-H and Junior Farmers help to build networks and leadership skills among farm and rural young people. Farming combines the elements of business with a way of life. Farmers and other rural dwellers differ in the emphasis they put on each of these facets. It's a matter of choice.

New farmers are increasingly coming from non-traditional and non-farming backgrounds, including young people, new immigrants and second career farmers. Each comes to farming in their own way, reflecting their personal values, skills and interests. Some new farmers dive right into full-time farming. Others grow their operation slowly over time, while others intentionally plan their farms as part-time ventures. Some farm alone, others with partners or family members, and some farm on a small scale and others on a large scale.

So how does a farm business differ from an urban business? For one, your house is likely on the business property. That's convenient – no commuting. It also means that if the business goes bankrupt, the home is lost as well. Effective planning is absolutely essential before starting a farming venture.



## Farming in Ontario

Ontario's rural landscape has changed dramatically in the past 100 years. In the 1930s, approximately 23% of Ontario's population lived on farms. By 2006, this had dropped to 1.5%, with most farm families relying on off-farm employment. Meanwhile, farm productivity has increased tremendously and farms are getting bigger. The average farm in Ontario consists of over 93 ha (230 acres) of land area based upon the 2006 Census of Agriculture.

Many farms are hobby or part-time ventures. In 2006, roughly one-quarter of all farms earned a Gross Farm Income (GFI) of less than \$10,000. At the same time, 17.5% of farm businesses earned a GFI of more than \$250,000 – so farming can be a small or big business.

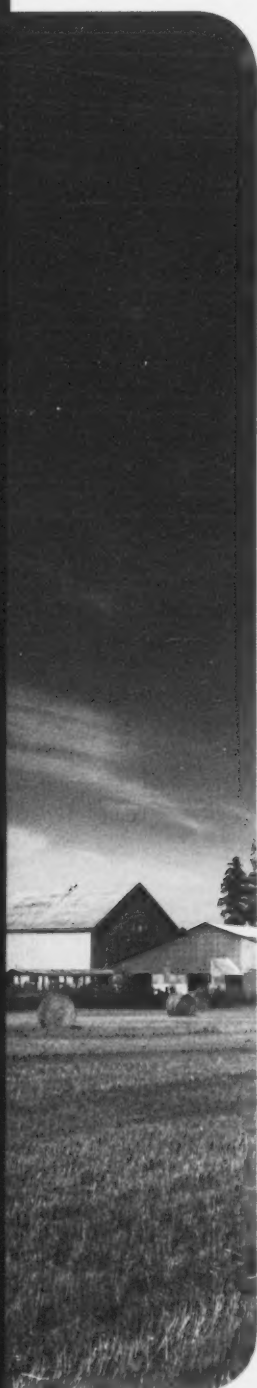
Ontario has much of Canada's best farmland and most favourable climatic zones for agricultural production. Ontario's relatively dense countryside allows for easy access to service providers such as tractor dealerships and suppliers, although this differs greatly by region. Large, diverse and growing urban centres provide substantial market opportunities for farmers. However, development pressure and urban sprawl continues to increase the cost of near urban farmland beyond the reach of most new farmers. Ontario winters are generally severe, and for those new to Canada, it takes time to adjust to seasonal growing limitations and rural winter living.

There are many regulations in Ontario that apply to agriculture, including regulations on manure spreading and storage, product labeling, and livestock transport and slaughter. Learn more about these regulations by contacting OMAFRA's Agricultural Information Contact Centre (AICC) and the Canadian Food Inspection Agency (CFIA), and visit a local health unit to learn about regulations (i.e. food handling, etc.). There are also regulations for the production of certain commodities – specifically milk, poultry and eggs – which are governed by marketing boards and require the purchase of quota (the right to produce and market the product).

## New Entrant Self Assessment

Not everyone is suited to running a farm business, and there are many different ways to be involved in agriculture. You can hobby farm or homestead (farming without the intent to make a profit), work as a farm employee or volunteer, and pursue a farm-related career. Starting a farm business is a serious financial and emotional commitment that deserves serious consideration. Look at the reasons for starting a farm, and your level of knowledge and skill. Before going further, consider these questions.

- What are the main reasons I want to own and/or operate a farm in Ontario? If quality of life is a main reason, understand what that really means. It is often a strong motivator for individuals wanting to work for themselves. But balancing quality of life with running a business from home, and making a living, is never easy. Take time to clarify what a desirable quality of life means for you.
  - What aspect of farming am I most passionate about?
  - Do I enjoy working with others or do I prefer working alone?
  - How important is having time with family?
  - How many hours a week do I want to devote to work?
  - Is this really the way I want to live?
  - Am I being realistic about the challenges and demands of farm life?
  - Do my family and/or friends support my farming idea and will they support me in becoming a farmer?

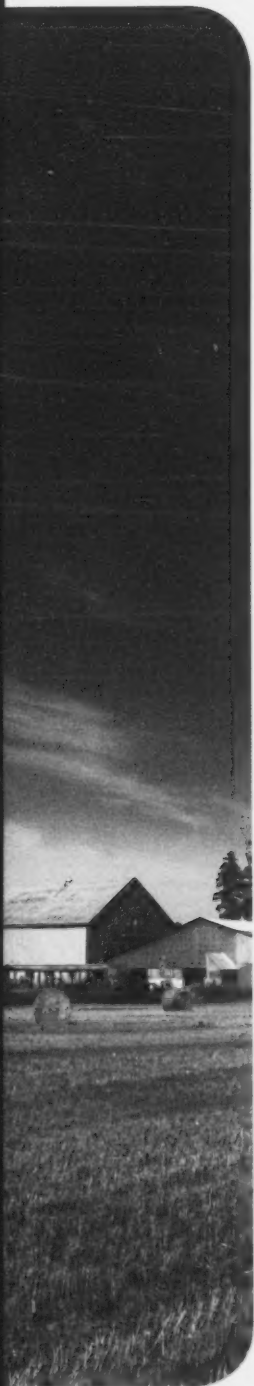


- Do I have the financial resources (i.e. down payment and start-up operating capital) to start a farm? How much am I prepared to invest in the farm business?
- Do I have the personal and business skills to take on the challenges and opportunities that farming requires? If not, will I seek out the necessary advice and skills? Farm business owners wear many hats. In addition to agricultural production, farmers must understand and perform business planning, marketing and managing labour, equipment and infrastructure. Be sure you understand and have the full range of skills and knowledge needed to run a farm successfully. Every new farmer brings a unique combination of life experience, educational background and work history. Ask yourself:

- What knowledge and skills will I bring to the proposed business?
- What additional knowledge and skills must I gain in order to start my business? How will I gain these?
- In what areas might I hire skills rather than acquire them myself?
- Have I discussed my farming idea or proposed plan with an advisor and considered any advice?
- Does my personality suit the farming lifestyle that often includes waiting several years to see a return on investment?
- Am I prepared to lower my standard of living to start the farm, if necessary?
- How will I handle the seasonality of the work?
- Is this the right time to start a farm based on my life and on the industry?

While assessing your situation and suitability to farming, be open and consider the comments and feedback received from others. If you still question whether farming is right for you, consider building the skills you need to start the farm, or draft a detailed business plan for your farm. You can also gain farm experience without the risk of running your own business. Many farms hire interns or apprentices to work and are trained in specific farming skills. While farm work can be difficult to schedule around jobs or family, experienced farmers recommend it as the best way to learn how to farm, to avoid years of mistakes and to help decide if farming is right for you. Some industry organizations also provide tools and courses to help you in the decision process (see New Farmers/Entrants in the resource section). These steps can help build confidence in your decision.





## 2. The Decision is Made, Now What?

Once the decision is made to start farming, your next step is planning. Ask yourself:

- What am I going to produce?
- Where will I produce it?
- What do I need to get started?
- What markets are there for these products, and how do I access them?
- What do I need to know to be successful in the type of farming I want to enter?
- What do I need for income and lifestyle from this farming venture? Is this realistic to achieve?
- How do I compete? What is my competitive advantage (quality, service, unique products, etc.)?

Each of these questions gives rise to more questions. Do some research and spend time learning and thinking about your future farm business. One of the best ways to learn is from experienced farmers. Look for farm advisors and mentors to learn about the new business and make important connections in the farm community. "People resources" are very important as you develop a vision for your farm. Use more than one learning tool. Network with other new farmers, look for opportunities for ongoing mentoring, read, attend workshops or courses and get in contact with the farm organization representing your product(s). If possible, work as a farm employee. Eventually, your research and learning will lead to the answers needed. Keep an open mind about the type of farm business to undertake. Above all, discuss the idea of farming as a livelihood with family, friends and others who will be affected by the potential change.

### What to Consider Before Buying a Rural Property

Buying a farm is not the only option to get your business off the ground. Purchasing a farm is a huge investment, requiring a long-term commitment and a substantial down payment. Alternatives include renting property or developing an arrangement with a landowner who has land and perhaps other resources available. Renting land is very common in Ontario – in 2006, one third of farmland was rented. Downsizing and retiring farmers may be interested in developing a succession plan with a new farmer to pass on their farm and business over time. There are also opportunities to access land through organizations or institutions interested in having their land used productively or to support a new farmer.

### General Considerations for Selecting a Farm Location

If you are going to purchase land or a farm, consider its location and characteristics.

- What will the property be used for?
- Is the soil type appropriate for what is to be grown? Some crops have more tolerance for heavy or moist soils. Some crops will grow well only in the warmer areas of Ontario.
- Is there an adequate water supply?
- If the farm sells directly to customers, is it close enough to the intended market? Some enterprises, such as pick-your-own fruit and vegetables, will be better suited if they are located close to urban centres or on main traffic routes.





- How will this move to the country affect your lifestyle and cost of living?
- How will you benefit from living in a rural community?

Factors such as commuting distances, road quality, fire, ambulance and police services and taxes will impact on your new life in rural Ontario. Consider all aspects of a new community before purchasing a property.

Like any business, answers to these questions determine what type of property you buy and where it is located. Remember, buying a rural property is only one option and some industry organizations provide support to examine other options (see New Farmers/Entrants in the resource section).

### **Other Important Considerations**

The following sections highlight other considerations related to water, septic and waste disposal, woodlands, and soil and climate to consider before investing in a property to start a new farm business.

#### **Water**

Most people living in rural Ontario get their drinking water from wells. Wells can provide a clean and safe supply of water pumped from subsurface aquifers. Water in the subsurface, commonly known as ground water, is recharged by infiltrating precipitation. The area of land replenishing the water supply for a well is the well's capture zone.

#### **Water Supply and Quality**

A clean and plentiful supply of water is vital to the success of the farm and health of the farm family. Do not take clean drinking water for granted. To prevent contamination, a well should be located upslope from any potential contamination sources (e.g. livestock housing, manure storage, etc.) and be properly constructed and maintained. Test drinking water three times a year for bacteria and once a year for other parameters (e.g. nitrate levels). Your local Public Health Unit may provide this service, as well as advice and brochures on water quality.

There are two main types of water wells – shallow and deep. A shallow well is usually approximately 1 m (3–4 ft) in diameter and 5–10 m (16–33 ft) deep. A deep well may have a 15 or 23 cm (6 or 9 in.) casing, extending 15–70 m (50–230 ft) or more into the ground. If a new well is needed, the type of well you dig, bore or drill depends on the availability and type of ground water in the area. A quick visit with a few neighbours, or a discussion with some local well drillers, helps determine your options.

Well drillers and borers must file information with the Ontario Ministry of the Environment concerning every well they drill or bore, including depth, casing size and flow rate. This information is available for all municipalities in Ontario.

#### **Drainage and Water Law**

Ontario landowners have certain rights and responsibilities concerning the use of water, especially for managing subsurface and surface water (e.g. streams, rivers, etc.).

Subsurface drainage of farmland provides a number of benefits to farmers – improving the ability of the soil to breathe and warm up, and providing more optimum conditions for seed germination and growth. Drainage improves the soil structure through better root growth,





so a higher proportion of rainfall filters into the soil, and makes more water available to the growing plants.

Well-drained farm soil is more resistant to compaction by machinery and livestock than wet soil, and less susceptible to erosion from surface water. Well-drained soil allows earlier planting, faster germination and more uniform crop growth. Crops grown on drained land yield higher and are less susceptible to disease than crops grown on cold, damp, compacted soils.

The economic benefits of subsurface drainage vary with the "wetness" of the soil, the value of the crop being grown and the production potential of the land. Data collected in Ontario and Ohio shows yield increases of 15% to 115% in normal farm grains. In certain high-value crops like tomatoes or oriental vegetables, the economic benefit could be in the thousands of dollars each year.

The *Drainage Act* allows landowners along a watershed to establish municipal drainage systems to carry away unwanted surplus water. These systems can include open ditches, pumping stations, dikes and/or tile drains. Municipal drains are established by a majority vote of the affected landowners, and paid for by a levy on the municipal tax assessment.

The *Tile Drainage Act* allows individual farmers to borrow money from the municipality to install tile drains to drain land into the municipal drain. Repayment of this loan is through the municipal tax assessment. Before buying a farm, check at the municipal office to determine if there is any drainage assessment involving the property, or an outstanding debenture under the *Tile Drainage Act* or *Drainage Act*. A plan showing the location of municipal drains is also available from the municipality.

Water may be drained into an adjoining natural watercourse, provided the watercourse has sufficient capacity to handle the increased flow. Landowners also have the right to receive water in a natural watercourse as they, or previous owners, have been accustomed to receiving it. Water may be taken from a natural watercourse for irrigation, pond-filling, aquaculture or other farm purposes, provided not more than 50,000 litres is removed daily. Beyond this usage, a Permit to Take Water must be obtained annually from the Ontario Ministry of Environment.

If a portion of the water is removed from a natural watercourse, a reasonable amount must be allowed to flow downstream. A landowner who disrupts a natural watercourse, by constructing a dam or installing a culvert, for example, or by taking too much water, becomes liable for damages resulting from the action.

### **A Farm Pond**

A farm pond can serve many purposes including a source of water for livestock or irrigation and a wildlife habitat. Determine these uses before building the pond, so the site, shape, depth and size of the pond are suitable. The water source and the soil type also affect pond design and location.

Pond owners need to have all the necessary permits before beginning construction. Approval from one agency does not guarantee approval from another. Landowners should contact the conservation authority responsible for their watershed for advice and guidance on various other aspects of farm ponds and other permits required.



## **Sewage and Waste Disposal**

### **Sewage Disposal**

Almost all rural homes depend on septic systems to treat household sewage. The conventional septic system used across Ontario has two main components – a septic tank and a leaching bed.

Check septic systems every three years and pump as required. This work must be done by a licensed contractor, and the waste disposed of in an approved manner and location.

Licensed contractors are available to install and maintain septic systems. A Certificate of Approval is required before constructing, installing or altering a septic system in any way. Contact your municipality for information on obtaining the necessary approvals.

### **Wastewater**

Part of the planning process should be consideration for the handling of wastewater. This applies to a number of industries including dairy, greenhouse and others. Wastewater must be handled in a manner that will not harm the environment. Specific requirements on the storage, handling, treatment and disposal of this material exist under the *Ontario Water Resources Act* and the *Nutrient Management Act*.

### **Waste Disposal**

Regular garbage pickup is not available in every rural community. Rural waste material that cannot be composted, reused or recycled must be taken to the local waste transfer station. Hazardous materials such as outdated medications, veterinary products, paints, cleaners, lubricants and their containers, used motor oil, insulation, pressure-treated lumber and batteries must be taken to a recycling depot or a designated hazardous waste disposal site.

### **Woodland**

Farm woodlots are an important part of the farm landscape. Forested land provides environmental, social and economic benefits to the farm owner. In fact, a well-managed forest can be an important source of farm income. Trees, like all other plants, grow, mature, become diseased and die. A well-planned program of harvesting mature trees keeps the forest young, healthy and productive, providing income and pleasure to the landowner.

### **Woodland Stewardship**

While traditional forest products like saw logs, fuel wood and maple syrup continue to be important income sources for many woodlot owners, opportunities also exist for specialty woodland products and services. These include niche products such as basswood for carving, black ash for basketry and foods such as fiddleheads, wild leeks and mushrooms. The forest can also be a habitat for nutraceutical and medicinal plants. Charging a fee for hunting, fishing, hiking, snowmobiling or other trail uses is another way of realizing the financial benefits from the forest lands. However, land owners need to bear in mind that these activities may adversely affect developing trees and wildlife habitat.

Today's woodlot owner must be knowledgeable about tax regulations, property rights and ecosystem management. Under the Managed Forest Tax Incentive Program (MFTIP) qualifying managed woodlots, at least 4 hectares (10 acres) in size, are taxed at 25% of the residential tax rate – the same rate as farmland. A Managed Forest Plan Approver must approve the woodlot. Application for the program is made to the Ontario Woodlot Association (OWA) or the Ontario Forestry Association (OFA).



Consult a chartered accountant, lawyer and municipal clerk concerning the tax and legal implications before making any change to land use and non-farming practices.

Allowing livestock to graze in a woodlot destroys the ecosystem by damaging the bark on existing trees, preventing seedlings from developing and compacting the soil in the woodlot. A healthy woodlot produces very few agriculturally-productive grasses, so livestock owners benefit very little by allowing livestock to pasture in the woodlot.

A healthy woodlot is a healthy ecosystem and provides habitat for a wide range of forest, plant and animal species. Woodlots that provide the best habitat for wildlife contain a mix of species, and trees of all ages and sizes.

### **Woodlot Management**

Good forestry practices provide improved wildlife habitat, recreational opportunities, a pleasant landscape, reduced wind speeds and improved water quality, as well as commercial forest products.

Forest management and harvesting practices are specialized skills, so it is important to seek professional advice in order to evaluate and manage an existing woodlot. To get the greatest benefit from a productive woodlot, understand sound forestry principles for harvesting. Seek advice from a registered professional forester, an experienced resources technician, or from experienced growers before you plant trees or manage or harvest your woodlot.

Some municipalities have enacted tree conservation bylaws restricting and regulating the cutting of trees. Administer timber sales with the help of a qualified professional forester or forest technician working as an agent for the woodlot owner. Only trees identified by these qualified individuals should be sold. The consultant prepares a contract of sale protecting the landowner and the land from unscrupulous harvesters or harmful practices.

Farms often have some land that cannot be cultivated and so should be retired from active agriculture. This land may be hilly, poorly drained, prone to drought or simply awkward to crop because of size or shape, but can be planted to trees. Conifers (evergreens) or hardwood trees may be planted successfully, although some species are more tolerant of extreme conditions.

Understanding the relationship between tree species, climate, soil type and water tolerance is very important in establishing a successful forest plantation. Most conservation authorities and private forest consultants offer advice in reforestation procedures and will facilitate a reforestation program.

The Carolinian Forest Region reaches into Ontario, forming a crescent-shaped area along the north shore of Lake Erie and southern Lake Huron, from Niagara to Goderich. This region is home to many nut species such as butternut, black walnut, hickory and edible nut species such as beech, heartnut and shag-bark hickory. These wild nuts are an important food source for wildlife, and some may be sold for human consumption as well.



### **Agroforestry**

Agroforestry combines agriculture or horticulture with forestry practices to produce food, forage, timber and other marketable products from farmland. One new and intriguing form of agroforestry is “timberbelting” around the perimeters of farm fields. Developed by New Zealand farmers, timberbelting places windbreaks around the fields to reduce wind damage. These timberbelts are a combination of high-value softwood and hardwood trees. Trunk pruning during tree growth enhances the value of the trees by producing knot-free timber at harvest. As the tree grows, branches are removed before they reach 2.54 cm (1 in.) in diameter. Traditional cropping in the field continues unchanged and unhindered, with yield increases and reduced soil loss due to effective wind management.

In another application, solid tree plantations are made with hardwoods inter-planted among conifers. The conifers provide protection for the deciduous trees, and both species are trunk-pruned to provide high quality timber. Mature conifers are harvested, leaving room for the slower growing and higher value hardwoods to develop into mature timber. In this application, trees are “cultured” to produce a marketable product, and unlike reforestation, trees are planned and managed like a perennial agricultural crop.

The benefits of agroforestry include landscape and income diversification, environmental protection, wildlife habitat improvement and economical, sustainable use of farmland. Water quality and ground water nitrate levels can be improved with timberbelts, windbreaks and stream buffers, which absorb farm nutrients and prevent runoff into watercourses. Hardwood forest stands can improve the land’s value as the trees mature, providing a return on investment over a period of time.

### **Private Land Resource Stewardship Program**

The Ministry of Natural Resources’ Private Land Resource Stewardship Program emphasizes the development of community partnerships to influence private land stewardship and resource management.

Through community-based stewardship councils, the program fosters responsible land care with workshops and seminars on proper woodlot management. Many landowners, supported by stewardship councils and the Ministry of Natural Resources, have formed woodlot associations to educate members. Your local Ministry of Natural Resources office can provide information on stewardship councils.

### **Soil and Climate Requirements**

Another important consideration before purchasing land is the soil type and climate of the property – these are dominant factors influencing the suitability of a crop in an area.

#### **Soil Types**

Different soil types have different characteristics that influence crop growth and how soil is managed.

**Sandy soils** are coarse and gritty, and are often referred to as light soils. They are easy to work and can be tilled earlier in the spring than clays or loams, but the crops planted in sandy soil suffer more during drought. The large soil particle size of these soils means they hold more air, and organic matter is oxidized and disappears more readily than in clay, silt or loam soils.





**Clay soils** are fine textured and often referred to as heavy soils. These soils become very sticky when wet. The timing of tillage operations is very important with clay soils to avoid damaging the soil structure. Tilling clay soils when they are too wet (to tillage depth) or driving over them when they are wet, causes soil particles to compact or smear. Germination is slow and inconsistent, and plant growth is stunted in compacted soil. If clay soils that are low in organic matter are tilled when they are too wet, they may form hard clods that are difficult to break down. Farmers on clay soils concentrate on building up organic matter, in combination with systematic tile drainage, to improve the soil productivity.

**Loam and silt loam soils** (between sandy and clay) are usually the easiest textures to manage, and suited to the widest variety of field crops. They contain a moderate level of clay and hold moisture and organic matter well. If not compacted, these soils will form excellent seedbeds and provide a good base for profitable crop production.

**Organic (muck) soils** are located in low-lying areas on the farm. They are black, have a high water table, and are composed almost entirely of partially decomposed plant material. These soils must be drained and managed to be productive and preserve the organic features.

Wind and water erosion, and the loss of organic matter through oxidation, are the most serious hazards facing organic soils. Keeping the ground covered with cover crops such as spring grains or oilseed radish and allowing the water table to rise closer to the surface during non-cropping periods reduces the rate of deterioration of these soils. Water table control is achieved through a complex drainage system. When part of a larger field, muck soils may be more subject to frost damage and have different pest and fertility problems than the rest of the field.

The proportions of sand, silt and clay in a soil determine soil texture. A simple “worm test” determines the relative proportions of sand to clay in a mineral soil. Roll a small ball of moist soil gently between your hands to form a “worm,” like you did with modeling clay when you were a child. The longer the worm you can form, the higher the proportion of clay in the soil. If the worm leaves a fine grit in your hand, the soil likely contains a good proportion of silt or fine sand. Soil maps help determine the soil type and texture on the farm, and are available for Ontario through ServiceOntario.

Soil structure is the result of the arrangement of these soil particles and the organic matter that holds them together. If a soil has a good crumb structure, the soil particles hold together loosely, and crumble apart if pressed when moist. This structure holds moisture well and forms into a firm, fine seedbed with a minimum of tillage.

Develop good soil structure by using different crops in a planned rotation and leaving crop residue on top, or incorporating it into the top 7.6–10 cm (3–4 in.) of the soil. Leaving crop residue on the soil surface, or planting a cover crop after harvesting, helps protect the land against erosion and loss of organic matter. Adding organic material such as manure or compost are also good ways to increase organic matter levels and improve soil structure.

### **Moisture Requirements**

Rainfall is not normally a serious yield-limiting factor in Ontario, although adequate rainfall in July and August certainly helps to maximize yields. Water requirements differ by crop. Winter crops such as cereals or canola are planted late summer or early fall and mature in early summer, completing most of their growth during times of regular rainfall. Most perennial crops (e.g. forages) have deep root systems and are more tolerant to lack of rainfall. Early season vegetable crops utilize early season moisture. Later planted crops are more susceptible to periods without rainfall.



Loam soils (see “Soil Types”) and soils high in organic matter content hold moisture better than light, sandy or gravelly soils, and need less rainfall during the growing season. Sandy or gravelly soils lose moisture more quickly and reach higher soil temperatures. Irrigation is not normally practiced on grain and oilseed crops as the loss in crop value due to drought normally rarely pays for the cost of irrigating. Irrigation is more common on fruit and vegetable crops.

### **Temperature Requirements**

The best drought insurance for most farm crops is to plant as early in the season as the soil condition and crop species allow and to promote rapid growth early in the season. The main risk with this practice is the danger of frost damage to seedlings. Recommended planting dates for each species are a guide, but local history may indicate when it is safe to plant frost-sensitive crops. Use a soil thermometer to determine when the seedbed is conducive to rapid germination.

Selection of corn, soybean and white bean varieties is based on a heat-unit rating for specific areas of Ontario. Crops such as cereals and canola develop best with daytime temperatures of 15°C to 24°C, while crops such as corn and soybeans develop most quickly in the 20°C to 32°C range. OMAFRA Publication 811, *Agronomy Guide for Field Crops* gives recommendations for selection of varieties of crops and cultural practices for all field crops normally planted in Ontario. Ordering information is available on the OMAFRA website or in the *References and Resources* section.

### **Farm Buildings and Structures**

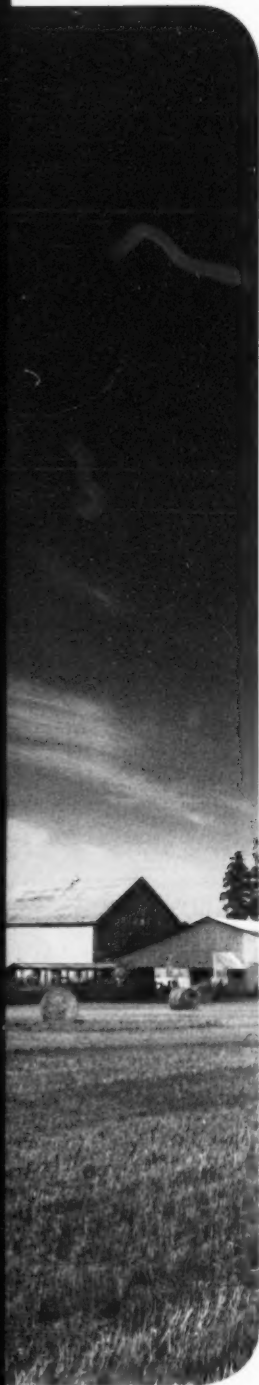
Starting a farm may require buildings to be constructed or renovated to suit your needs. Whether it is a machine shed or livestock facility, there are a number of things to think about including requirements of the *Ontario Building Code* and local municipal regulations. Before building or renovating a farm structure, refer to the OMAFRA factsheet *Construct or Renovate Farm Structures*.

### **Preparing a Business Plan for the Farm**

Consider your farm to be like a department store. Each enterprise – crops, sheep or pick-your-own strawberries – is a separate department, but there is only one bank account (separate, of course from the owner’s personal account). Which departments, or commodities, contribute most toward the bank balance, and which ones detract? The only way to know is to keep track of the activities, costs and returns in each department or enterprise, and of each product class in that department or enterprise.

In some ways, farming is more complex than a department store. Many factors beyond the farmer’s control contribute to the production and sale of their produce. These factors must be considered before deciding to enter a particular enterprise or farm enterprise.

Budgeting, recordkeeping, market analysis and preparing business plans are all part of a successful farm manager’s tool kit. These tools help farmers decide which activities to pursue, which to expand and which to reduce or eliminate to meet business goals. Many new businesses fail from poor planning, and preparing a comprehensive business plan improves the chances of success.





A business plan serves two purposes – as a guide for decision making in the day-to-day operation of the business, and a tool to explain the business to lenders. If thoroughly prepared, the plan ensures entrepreneurs consider all aspects of business development that impact on the new business, before they make the investment.

Lenders look to the business plan as a statement of the business's financial viability. They want to know their loans can be repaid out of the day-to-day business, and that the farm owner makes a good return.

### **What to Include in a Business Plan**

There is no set formula or template for developing a business plan, but it typically includes six or seven (depending upon how it is organized) sections or components.

#### **Executive Summary and Business Profile**

The executive summary catches and captures the reader's interest. It is a high level overview of the business concept (what is being produced and marketed, why and what makes it unique – market demand), projected targets (units and dollars) for the plan's timeframe and how they will be reached, along with identifying any required financing, potential sources and outlining how the funds will be utilized and repaid.

The business profile gives a brief description of the business and its ownership structure (e.g. sole proprietorship, partnership or corporation). It also contains key information including where the farm is located, the management team, previous financing, proposed start-up date (if new), details of the business's current or future market area, customers and trends to be built on, and any other relevant high level pertinent information.

#### **Business Strategy**

The strategy is the visionary and directional section of the business plan. A business strategy states the entrepreneur's goals and proposes how those goals will be achieved.

The remaining parts of the business plan expand on the strategy to identify the product or service the business provides, the customers, competition, production and marketing plans, how all aspects of the business are managed, and how the financing is organized.

To develop a business strategy, ask yourself:

- What is my vision for the farm? What will it look like in 5 or 10 years?
- What is my mission? What are the purpose and the activities of the business?
- What are my values? What will the businesses' conduct or relationship be with consumers, the community, etc.?
- What are the objectives? What are the results the business will achieve in the medium to long term?
- What are the goals? What are the specific, time-based steps to be achieved to reach the objectives?



### **Marketing Plan**

The marketing plan – a major component of any business plan – outlines how the customers' needs match the product or service provided. Developing a marketing plan involves market research, goal setting and evaluation.

Ask yourself:

- What industry sector am I in (i.e. horticulture, beef, sheep, crops, dairy, etc.) and are there specific marketing structures in place (i.e. marketing board or agreement) that I need to follow and work with? Do I understand how it works?
- Market research can help answer questions – Who will or is currently buying and using my product(s) or service(s)? Who are my customers? Where do they come from? What are their characteristics? What do they like about the product(s)?
- Who are my competitors and what product(s) are competing with mine (competitive intelligence)?
- What benefits am I selling to the customer? What is the demand for my product(s)?
- What is the customer prepared to pay and how will I price my product(s)? What is or will be my cost of production and therefore my break-even point?
- How much does the customer want/need and how can I build market share? How much do I plan to sell (i.e. what are my sales forecasts)?
- What are my marketing channels? For example, indirect (contract with broker or elevator or processor, through a sales barn, etc.) or direct to customer (roadside stand, on-farm retail store, farmers' market, etc.).
- Should I consider value-added? What does this do to my costs and opportunity to sell? If I decide to value-add, are there other considerations (regulations, zoning, etc.)?
- What will I do if I have a product shortage or excess?
- How will I promote my product(s)?

### **Production Plan**

The production plan describes how the product is produced, how it is prepared for sale and the services provided with the product.

Ask yourself:

- What do I need to know about the production of this product?
- What resources do I have to produce the product (land, labour, capital)?
- Do I have the facilities to raise (livestock), grow (greenhouses) and store (crops, etc.)? If not, what is my plan to address this?
- How much do I need to produce to meet the demand? Can I meet an increasing demand?
- What is or will be my cost of production? Are there ways to reduce this?
- Is there sufficient margin of profit between cost and price?
- Is the profit margin worth the risk?
- What can I do or what steps can I take to reduce these risks (production insurance, etc.)?

### **Human Resources Plan**

The human resources plan describes the labour needs of the business including recruitment, retention, motivation, training and management of staff. Human resources management and labour is one of the critical pieces to the success of your business, especially during key activities periods (planting and harvesting).



Ask yourself:

- How many hours of labour do I need to develop and operate this business?
- How many hours can my family and I provide? How will they be paid?
- How many hours of labour will I need to hire, and in what form? How will I recruit, motivate and train them? What will I need to pay them?
- If I plan to hire outside labour, do I know and have met all of my legislative requirements under the *Occupational Health and Safety Act*, *Employment Standards Act* and *Workplace Safety and Insurance Act*? Have I factored in the cost of meeting these requirements? See section on Managing Farm Labour and Human Resource Management for further discussion.
- Do I need to prepare an employee handbook?
- What benefits must I pay to my employees and myself, and what other benefits do I want to provide?
- How much additional revenue will each unit of labour generate for the business?

### Financial Plan

The financial plan is the backbone of the business plan, describing how the business will be financed. It describes the business plan in dollars and cents, and identifies any gaps, discrepancies or underlying issues. The financial plan is critical for creditors or lenders to evaluate the farm's need and use of funds.

Financial plans include income statements, cash flow statements, balance sheets, a capital sales and purchases plan, and a financing schedule along with other supporting documents like copies of contracts and leases.

Ask yourself:

- What financial resources do I have to contribute?
- What will it cost to get this business into operation?
- What is my projected income?
- What will I need to operate the business until there is enough cash flow to start paying back loans? How long will this take?
- What sources of financing can I access to get what I need, with a comfortable margin? Will I be able to afford the principal and interest payments?
- What will my financial position be after the first five years of business?
- How sensitive are the plans to changes (sensitivity analysis with what if scenarios)?

### Social Responsibility

Social responsibility addresses how the farm business creates a positive interaction with the natural environment, the community and/or the industry. It may involve assessing the farm's environmental stewardship and improving the land, water, air or wildlife resource base. Goodwill and community involvement could be included as part of the farm business.

Ask yourself:

- How can I support environmental stewardship on the farm and in farm activities?
- Is community involvement important to me, and can I use the farm business to support this involvement?
- How can I use my passion to support the betterment of the industry as a whole?



### Benefits of Planning

These six or seven sections make up the complete business plan. Start your plan with a vision and mission statement – a simple statement of the hopes and dreams for this business. Frame the mission statement and hang it on the office wall where you can read it every day to keep your business on track.

The business plan is your study of the business, for your own information and your benefit. Make it your own so it is more satisfying and meaningful. It is also a powerful communication mechanism to others including potential lenders and employees, if you have them.

Any business, whether full time or part time, benefits from planning on paper before investing much money. Even as a part-time venture, a farm business can grow, prosper and develop into a lucrative, full-time business, or it can decline. Plan to spend 10% of the cost of a business getting information and planning before the business actually starts. Planning ahead makes a lot more economic sense than finding the pitfalls after the investment is made.

### Farm Business Registration Number

A farm business registration number is not needed to begin farming in Ontario, but depends on your gross farm income once there is enough production to see a return. Farm businesses that gross more than \$7,000 in farm income are required by law to register their business under the *Farm Registration and Farm Organizations Funding Act, 1993*. Agricorp delivers the Farm Business Registration (FBR) program. Farm businesses must pay an annual fee and choose the general farm organization they wish to join (exceptions apply). The application deadline each year is March 1.

With a valid FBR number, producers can:

- Apply for eligibility in the Farm Property Class and if all other criteria are met, pay 25% of the municipal residential rate for farm land and buildings.
- Obtain membership with one of the following general farm organizations (GFOs): the Ontario Federation of Agriculture (OFA), Christian Farmers Federation of Ontario (CFFO) or National Farmer's Union (Ontario) (NFU-O).
- Access related programs and services eligible by having a farm business registration number at [www.agricorp.com/en-ca/Programs/FBR/Pages/Overview.aspx](http://www.agricorp.com/en-ca/Programs/FBR/Pages/Overview.aspx)



## 3. Starting a Farm 101

### Managing a Farm

Like any business, managing a farm can be challenging and easily neglected in the daily and more urgent chores. However, careful management of the farm increases the likelihood of success over the long term.

### Record Systems

Keeping accurate records of the financial and physical aspects of the farm business provide the basis for good planning and decision making. Recordkeeping is more satisfying with a system that is simple and easy to use. When the records show how the business is doing from month to month, record analysis is an interesting exercise, instead of a chore.

With farming, the main challenge and goal is to beat your past performance. A system that shows more pigs weaned, or greater sales volume than last year, makes recordkeeping and analysis a rewarding part of the business operation.

Financial records include all income and expense items, credit transactions, and valuations of all capital and inventory items. Physical records include items such as grain yields, quantities of feed and/or fertilizer purchased, livestock weights, production per animal, etc. Set up physical and financial records so they interrelate, to show how expenditure in one area results in a profit or loss in another.

Accurate records help with budgeting, supply the information required for the preparation of financial statements, and provide the necessary information to fulfill the requirements of the Canada Pension Plan, Employment Insurance, Employer Health Tax, Workplace Health and Safety Insurance Board, Income Tax and Harmonized Sales Tax (HST). Finally and most importantly, good records provide the information necessary to assist in decision making.

### Using Budgets

Budgets are part of the financial plan in your business plan, and are important tools for planning major purchases or changing the capital or operation of a business.

A realistic budget, forecasting revenue and costs is vital for evaluating the feasibility of a proposed venture. A monthly cash flow projection for the 12 months ahead is also useful when planning credit needs and debt repayment schedules. Cash flow projections for 3 to 5 years are often requested by lending institutions when financing a new business or venture.

Budgets can be full or partial. A full budget considers all of the costs and returns associated with an activity, and this technique is used when planning an enterprise from scratch. A partial budget is often used when planning a minor change or project, and considers only the added expenses and added income resulting from the proposed change. Added income may come from increased sales revenue or reduced costs, or both, while added expenses may come from increased costs or reduced sales revenue. The difference between added income and added costs is the extra profit (or loss) the manager expects to receive (Table 1.).





**Table 1. Partial Budget Form****Partial Budget – Proposed Plan**

<b>Advantages</b>		<b>Disadvantages</b>	
<b>Added Annual Revenue</b>		<b>Added Annual Expenses</b>	
Custom work	\$	<i>Variable:</i>	
	\$	Repairs	\$
	\$	Fuel	\$
	\$	Labour	\$
	\$	<i>Fixed:</i>	
	\$	Taxes and insurance	\$
	\$	Lease and rent	\$
	\$	Interest	\$
	\$	Depreciation	\$
<b>TOTAL</b>	<b>\$</b>	<b>TOTAL</b>	<b>\$</b>
<b>Reduced Annual Expenses</b>		<b>Reduced Annual Revenue</b>	
<i>Variable:</i>			
Labour	\$		\$
Fuel	\$		\$
Equipment repairs	\$		\$
Seed and plants	\$		\$
Other	\$		\$
<i>Fixed:</i>			
Taxes and insurance	\$		\$
Lease and rent	\$		\$
Interest	\$		\$
Depreciation	\$		\$
<b>TOTAL</b>	<b>\$</b>	<b>TOTAL</b>	<b>\$</b>
<b>Added Profit (or loss) \$</b>			

**Managing Farm Labour and Human Resource Management**

Depending on the size and nature of the farm business, you may need to hire additional labour, on a full-time or part-time basis. A human resources plan is a key part of the business plan and needs serious consideration in the planning process.

Fruit and vegetable production usually requires help, at least during harvest, and sometimes during the planting and growing season. Livestock enterprises, if they exceed the work requirements of the family members, may require year-round assistance.

The availability of farm labour is an ongoing challenge in Ontario. But, many people prefer to work outdoors with animals or machinery, and prefer the farm environment and lifestyle. Others look for seasonal work or part-time employment. Employers providing competitive wages, respectable hours and clean, safe working conditions have fewer problems finding and





keeping good employees. In fact, many seasonal workers return to the same farm year after year. Producers may also consider opportunities under programs like the Seasonal Agricultural Workers Program (SAWP) offered through the federal government (Service Canada).

Today's workforce is increasingly mobile. Employees are willing to search for jobs offering the satisfaction and compensation they are after, so if farm businesses do not offer job growth and development, there may be significant employee turnover.

Becoming an employer requires careful consideration. Managing employees at arm's length is different from managing family members, and can change how the new employer operates the business. Labour laws, payroll management, contributions for benefits, vacation allowances and working conditions become a more structured part of your management and operating style.

The creation of a new position must benefit the owner, the family and the employee. A satisfied and self-motivated employee is more likely to add positive returns to the business than a dissatisfied one. A clearly defined job, spelling out the chain of command and the relationship of the employee and other family members along with reasonable working conditions, pay and vacation, goes a long way to creating productive and satisfied employees.

Before hiring, write down the objectives for each job. Keep a separate file for each employee so the manager can refer to these objectives when evaluating the employees and making management decisions. Here are some questions to consider before making the decision to hire.

- What type of help do I need: short-term, part-time, full-time seasonal or permanent?
- Do I have sufficient cash flow to maintain the type of employee(s) I need?
- Will the job keep the interest of a highly motivated employee?
- What is the payback associated with the addition of hired labour?
- Do I have sufficient people skills and patience to train, supervise and evaluate employees?
- What type of employee is best suited to the job?

When planning labour requirements, use Table 2 to budget labour costs. Remember, the cost of hiring includes wages plus employer's contributions to Canada Pension Plan (CPP), Employment Insurance (EI) and Workplace Health and Safety Insurance Board (WHSIB) premiums. These are mandatory contributions, and can add significantly to the cost of hiring. These benefits also contribute to the availability of labour for farm work in Ontario.

After factoring in these labour costs, new farmers must also be aware of their responsibilities under three Ontario labour acts – *Occupational Health and Safety Act* (OHSA), *Workplace Safety and Insurance Act* (WS&IA) and *Employment Standards Act* (ESA).

The Ontario Ministry of Labour is responsible for the administration and enforcement of labour legislation in Ontario. Further information on all of these Acts can be found at the Ministry of Labour website.



**Table 2. Planning Labour Needs**

Item	Task				
	1	2	3	4	5
No. persons					
When required					
Total time					
Wage cost					
CPP					
EI					
WHSIB					
<b>Total Cost</b>					

Various enterprises require different kinds and amounts of labour. There is a significant range in estimated labour requirements for different crop and livestock enterprises. Table 3 offers ranges of estimated hours of labour required per hectare and per acre for some field crops. Table 4 offers ranges for the estimated number of livestock per full-time labour equivalent. These two tables aim to assist in planning labour needs, but producers must complete further research for their own specific situation. Consider if all or part of the labour will be supplied by family members, and if the hours needed are more or less, depending on the size, equipment and labour efficiencies involved. Note: users of this information assume all responsibility.

**Table 3. Ranges of Estimated Hours of Labour Required for Some Field Crops**

Crop	Range of Estimated Hours per Hectare	Range of Estimated Hours per Acre
Grain corn	5-10	2-4
Silage corn	6-12.5	2.5-5
Soybeans	4.3-7.5	1.75-3
Spring grains (oats, barley, wheat, etc.)	5-7.5	2-3
Hay	10-12.5	4-5
Processing tomatoes	285-988	115-400

**Table 4. Ranges for the Estimated Number of Livestock per Full-Time Labour Equivalent**

Type of Livestock		Number of Livestock per Person
Cattle	Dairy cows	30-60
	Beef cows	100-125
	Feeder cattle	*200-500
Swine	Sow farrow to finish	**150-200
	Sow farrow to wean	**300
	Nursery	2,500 spaces
	Finishing	4,000 spaces
Sheep	Ewes (with lambs)	300-400
Poultry	Caged laying hens	*10,000-50,000
	Broiler chickens (8 weeks)	*50,000-75,000

\*Additional per diem help may be required for tasks such as clean-out, weighing and loading.

\*\*Based on number of sows.

Paying wages to family members who work on the farm is a tax-deductible expense to the farm business, and splitting income among family members may reduce the family's total income tax bill. The *Income Tax Act* requires payment to be commensurate with actual work done, the age and the abilities of the family member.

### Managing Risk

All businesses contain an element of risk, and farming is no exception. There is risk of crop loss from weather or disease, late or early frost, and prices dropping below the cost of production. There are risks for livestock losses from disease, price or management factors, risk of being sued for livestock escapes, environmental pollution, or other public liabilities, and risk of currency and interest rate fluctuation.

Of all of these risks, farmers only truly control their ability to manage their businesses. The decisions farmers make can place their businesses in jeopardy or can determine whether the benefits from a course of action outweigh the risk of taking the action. While farmers cannot, and should not, avoid risk completely, they can minimize the chance that a downside risk factor will happen, or the effect of the risk factor if it does happen.

Reducing the chance that the downside risk factor happens is one of the goals of business planning and management decisions. Thoroughly understanding the factors of production and knowing what can go wrong, and why, helps farmers avoid many of the risks inherent in an enterprise. Simply choosing enterprises with a history of profitability, and selecting crops or stock with a margin of safety, reduces the chance that a loss may occur.

Controlling debt-to-asset ratios and participating in various safety-net programs also helps farmers reduce the effect of risk.



## **Risk Management Tools**

### **Budgeting**

Carefully prepared budgets help decide which actions or enterprises to undertake, and which are not worth the risk. Sensitivity analysis or “what if” scenarios help decide if the idea is likely to be successful under varying conditions. OMAFRA has several enterprise budgets posted on the website for users to test the effects of various scenarios.

### **Hedging**

Commodities are hedged to protect against price fluctuations on the market. A producer may take a position in the futures market which is equal but opposite to an existing cash market position. Changes in cash price of the actual commodity may be offset by fluctuations in the future prices offered by speculators.

### **Forward Contracts**

A forward contract is an agreement between two parties (i.e. a wheat farmer and cereal manufacturer) in which the seller (farmer) agrees to deliver to the buyer (cereal manufacturer) a specified quantity and quality of wheat at a specified future date at an agreed price. It is a privately negotiated contract that is not conducted in an organized marketplace or exchange. Both parties to a forward contract expect to make or receive delivery of the commodity on the agreed date. It is difficult to get out of a forward contract unless the other party agrees. All forward contracts specify quantity, quality and delivery periods. If any conditions are not met, the farmer usually has to financially compensate the buyer. Understand your legal obligations before entering into a forward contract in case you cannot meet the conditions of the contract.

### **AgriStability**

This program protects producers against large declines in their net farming income due to market conditions, production loss or increased costs of production. AgriStability is based on margins – it compares a participant’s production margin to their reference margin. If a participant’s production margin is less than 85% of their reference margin, a benefit is triggered. In Ontario, AgriStability is delivered by Agricorp.

### **AgriInvest**

This program is available to help producers manage smaller declines in their net farming income. AgriInvest replaces the coverage for margin declines of less than 15%. Each year, producers can deposit into an AgriInvest account, and receive a matching government contribution. Producers have the flexibility to use the funds to cover small margin declines, or for risk mitigation and other investments. AgriInvest is delivered by Agriculture and Agri-Food Canada.



### Production Insurance

Production insurance is a business risk management program protecting Ontario farmers from yield reductions and crop losses due to adverse weather and other insured perils. Producers choose from a range of coverage options that provide the level of protection they require. Producers pay 40% of the total premium cost, and federal and provincial governments contribute the other 60%. Administrative costs are fully funded by both levels of government. In Ontario, production insurance is delivered by Agricorp.

For more information on programs and services currently available to Ontario farmers please refer to the factsheet called *Programs and Services for Ontario Farmers*.

### Other Risk Management Programs

There may be other specific risk management programs available to you as a producer. Whether you qualify and would benefit from these programs will depend on your own specific situation. Current information on what risk management programs are available can be found on the OMAFRA website.

### Farm Credit in Ontario

Farming, whether it is part time or full time, is a business that requires investment and operating costs beyond the personal financial reserves of most people. Credit is available for farmers, as for other business people, but the sources may be different. Chartered banks, credit unions and caisses populaires are active lenders to farmers. Farm Credit Canada (FCC) is a major agricultural lender in Ontario. FCC is a national crown corporation whose mandate is to lend capital to farm or farm-related businesses.

The farm supply trade sometimes extends credit to its customers with deferred payment plans, leasing options and regular payment options. This credit is most frequently practised by livestock feed suppliers, crop input suppliers and farm machinery companies. Private borrowing is still a common practice for mortgages, vehicles and special projects.

The two most powerful tools a farmer has to obtain loans are collateral (equity) and business skills. Lenders also look at the repayment capacity and cash flow of the farm business. Having sufficient collateral, or net saleable assets, to cover the loan reduces the lender's risk in making the loan, and increases the borrower's chances of negotiating a better rate. A history of running a business successfully, and presenting a complete and realistic business plan with good cash flow and solid cash flow projections, are two ways farmers can demonstrate their business skills. Complete knowledge and understanding of the farming enterprise is also important.

Money borrowed for a particular item must be repaid before the item is worn out or sold. If the repayment period on a tractor loan is 15 years, and the tractor is worn out after 10, the owner is paying for the old tractor while trying to finance a new one. Aim to have the asset paid for while it still has useable life. The shorter the loan period, the lower the cost of borrowing will be at the same interest rate.

Repayment periods match use, so loans are classified as operating (short-term), intermediate-term or long-term loans.





Operating loans are usually arranged with the lending institution as a line of credit. The operator calculates the amount of money needed to run the business for a year, and this amount of "credit" is extended and drawn on as needed on a daily interest basis. The operator writes cheques and repays the line of credit as often as desired, as long as the limit on the line of credit is not exceeded. This "line" is renegotiated at the end of each fiscal year or sooner if necessary.

Items with a lifespan of between 1 and 10 years are often financed by a chattel mortgage. A loan is made for the purchase, to be repaid over a stated period. The lender has claim to the asset named (tractor, cow, etc.) if the loan is not repaid at the end of the term.

Long-term loans cover land and buildings, and any other asset with an expected lifespan of more than 10 years. These are usually in the form of true mortgages of 10–25 years, with terms of 6 months to 5 years until the principal and interest are all repaid.

### **Renting/Leasing Arrangements**

Leasing and renting farm land and other assets (like equipment) is a common practice in Ontario. The high capital cost of these items makes leasing an attractive alternative to ownership. There are advantages and disadvantages to leasing. The reduced capital cost is an advantage, but the difficulty of securing long-term leases on land and buildings is a disadvantage.

For farm land, there are various land rental arrangements used in Ontario. These include rental of all or a portion of the land or, alternatively, leasing the complete unit, including land, buildings, livestock and equipment, as an ongoing operation.

A successful lease arrangement must satisfy both the landlord and tenant. Before entering into a lease, the landlord and tenant should consider more than just price. Consider the compatibility of the landlord and tenant, and the fairness of the lease. A written lease can be as simple or detailed as the landlord and tenant wish.

### **Types of Leases**

#### **Cash Lease**

A cash lease (also referred to as cash rent) is one of the most common types of leasing agreements. The tenant (also called operator or lessee) receives the income from all crop sales, and pays the landlord (also called owner or lessor) a predetermined fixed dollar amount (cash rental rate) for the use of the property each year. The tenant makes operating and management decisions, and the landlord provides the use of the land and looks after the capital costs of the asset. The landlord is not involved with the management of the operation and does not deal with marketing concerns.

The rental rate is based on the productive capacity of the farm, crops to be grown, and local supply and demand for farmland rental. With cropland or pasture, rent is usually based on a rate for each workable acre. In some agreements, the rental rate for pasture is based on the weight gain of the cattle being pastured.

If the farm is rented as an ongoing operation, the cash fee may be related to the income of the whole enterprise. The rate is negotiated and agreed to by both parties.

A written lease agreement covering all of the details is strongly recommended.



### **Crop Share Lease**

Crop share leases (also referred to as share-cropping lease) are not as common as cash rental leases in Ontario. Crop share agreements are based on a split or division (e.g. 33:66, 50:50, etc.) of the crop between the landlord and the tenant. In a crop share lease, the owner/landlord pays the property taxes, supplies the land, buildings and usually a share of the operating expenses (i.e. cost of inputs). The tenant operator supplies labour, machinery, equipment and/or livestock, and their share of the operating expenses. The crop is sold or divided in prearranged proportions, for example on a 50:50 basis. Both landlord and tenant gain through good cropping practices, and higher yields and prices.

### **Flexible Cash Lease**

Since farm commodity prices and crop production costs can fluctuate widely from year to year, tenants and landlords may not want to commit to a fixed cash rent for more than one year. Tenants are concerned a fixed cash rent could create a financial hardship if prices drop or if poor growing conditions reduce yields. Landlords may think it is unfair for the tenant to reap all the benefits of a sharp rise in crop prices or yields. If neither party want a crop share leasing arrangement, a flexible cash lease arrangement can help a tenant and landlord reach an agreement that addresses both their concerns.

Under a flexible cash lease agreement, the tenant receives all of the income from crop sales but the dollar amount paid to the landlord each year varies with either the price or yield of grain, or both. This agreement incorporates features of both the crop share lease and the cash lease, and the risk borne by the tenant and landlord depends on the type of leasing arrangement.

### **Custom Feeding**

In some cases, a cattle owner will hire a farmer to feed cattle to market weight. The landowner provides the feedlot, the feed and the labour and management in exchange for a fee based on the weight gained by the cattle over a period of time. The ownership of the cattle does not change hands, and the owner of the farm gets paid for his skill in producing efficient weight gains.

### **Profit-Sharing Arrangements**

An older farmer or absentee landlord who owns a complete operating unit may consider a profit-sharing arrangement. Generally, the operator is a young person with limited capital, livestock and equipment. This arrangement permits the young farmer to acquire the use of capital-intensive farming assets. The operator may share in the net income of the farm, or receive part of the crop or livestock in lieu of cash, helping the young operator build equity toward owning their own farm. For this arrangement to work successfully, accurate records are imperative and the terms of the agreement must be well understood by both parties.

### **Suggested Farm Leasing Practices**

For the financial protection of both owner and operator, never occupy real estate without a written lease. Both parties should meet annually to discuss plans, review the lease terms and make any necessary revisions, even if the lease is for more than one year.

Leases customarily range from 1 to 5 years in length. Both parties must have the option of terminating a lease prior to a definite date if circumstances change sufficiently. A lease often specifies that a third-party arbiter be called to settle disputes if the principle parties are unable to agree to terms. Compensation to one of the parties may be necessary when a lease is terminated prior to its complete term.



### Lease Provisions

A written lease helps minimize the risk of a misunderstanding. A written agreement is not a sign of distrust – it shows that both parties want a clear understanding of the agreement they are making.

A written lease provides both the landlord and the tenant with a record of what they have agreed to. This is especially important with a crop share lease where the landlord and tenant are sharing costs. A written lease:

- clarifies the expectations and responsibilities of both parties, and if a dispute occurs it can prevent costly legal action by providing for alternatives to a court proceeding
- gives the landlord some protection in the event of an environmental liability
- provides a valuable guide to heirs if the landlord or tenant should die
- provides documentation for tax purposes

In general, the landlord (owner/lessor) is responsible for maintaining the property and making any permanent improvements that increase the value of the property. The operator (tenant/lessee) is responsible for the costs of operation, repairing items related to the operation and leaving the property in the same condition at the end of the lease as it was at the beginning.

The following items are required in a lease agreement:

- names and addresses of both parties – tenant and landlord (and spouses if required)
- legal description of the property to be rented
- term of the lease – beginning and ending dates of the agreement (how long it lasts for), provisions for rendering possession at both dates, and provisions for renewal (when and how)
- rent payable or the proportions of share – the amount of rent (or proportions), how it is calculated and when it is to be paid (the place and time of crop delivery)
- signatures of all parties and witnesses who are unrelated to the agreement

Every landlord and tenant should consider including these items in a lease agreement:

- right of entry or inspection by the landlord and removal of crops
- transfer of property – expectations if the farm property is sold
- termination of the lease
- use of the land – use of normal farming practices and provisions on how the land is to be left at the end of the lease
- environmental matters and responsibilities
- insurance – who is responsible for what insurance coverage
- rights to assign or sublet the lease – prevents tenant from assigning or subletting without the written consent of the landlord

There are also a number of optional items that add clarity to the lease agreement, and provide discussion points for the landlord and tenant as they formulate the agreement. These include:

- resolving differences – how irresolvable disagreements are handled through arbitration
- production practices and management decisions – outlines decisions the landlord wants carried out by the tenant like cropping decisions, use of fertilizer and chemicals, production and revenue insurance, delivery and sale of crop, etc.



- responsibilities and compensation for repairs to buildings, fences and improvements – who's responsible, how expenses are shared and any permissions required
- compensation for property damages – party suffering the loss should receive any compensation
- right of first refusal – in a sale situation, the option for the tenant to purchase the property by matching an offer from a third party
- option to purchase – similar to right of first refusal, the option for the tenant to purchase the property, either at a fixed price or a price determined by some other objective method
- municipal zoning restrictions – landlord assurance to the tenant that the land is properly zoned for agricultural use
- miscellaneous – termination or renegotiation of the lease if certain natural disasters or unforeseen circumstances occur (flood, installation of a highway, gas line, oil well site, etc.) where tenant was unable to use the property or the situation creates inconvenience and additional operating costs for the tenant



Ontario has a system of registering interests in land, including leasehold interests. Under Ontario law, a lease for more than 7 years must be registered in the land registry office where the land is located. Leases of less than 7 years may be registered by the registration of a Notice of Lease advising the public that the terms of the lease can be made known by contacting either of the parties. The advantage of registering a lease is that a potential purchaser of the property is deemed to have been notified of the existence of a lease, whether or not they conducted a title search.

Registering all leasehold interests ensures that public notice can be provided on the claims of both the landlord and tenant. The cost to register the appropriate documents in the land registry office is currently about \$60.

### Types of Business Structures

A business may be a sole proprietorship or a partnership, and may be operated as an unincorporated private business or as a corporation. There are sound business reasons for choosing any combination, based on the goals of the owner, and the size and nature of the business. Each business structure has advantages and disadvantages.

**Table 5. Comparative Advantages and Disadvantages of Various Business Organizational Structures**

1. Sole Proprietorship	
Advantages	Disadvantages
• Complete independence of ownership	• Unlimited liability
• Greatest flexibility in decision making, be your own boss	• Sharing profits and growth may be difficult
• All profits go to the owners	• Profits are taxed at personal tax rate
• Simple, less complex records and recordkeeping	• Simplicity sometimes means lack of good information for decision making



**2. Partnership**

Advantages	Disadvantages
• Can be a very flexible structure to allow for income splitting	• Legal liability for all partners
• Lower establishment and maintenance (i.e. accounting and legal fees) relative to a corporation	• Shared profits among partners
• Easier to dissolve than a corporation	• Divided authority
• Broader management base	• More complicated decision making
• Possible tax deferral opportunities (rollover provisions and capital gains exemption)	• May be difficult to find suitable partners
• Profits are shared	• Need good records of who owns various assets
• May be possible to deduct farm losses from other income sources	• Income taxed at individual tax rates

**3. Corporation**

Advantages	Disadvantages
• Corporate tax rate lower than most personal rates	• Higher initial and ongoing costs (legal and accounting)
• Some limited liability opportunities	• Added tax and legal reporting requirements
• Good financial statements and records — may help with decision-making	• More professional advice and assistance required due to complexity of business structure and added reporting requirements
• Ownership is transferable as shares	• Unlike an individual, a corporation does not have any capital gains exemption
• Self-sustaining, perpetual legal entity	• Expensive and difficult to “wind down”
• Possible tax deferral opportunities	

Most farm businesses begin as sole proprietorships or partnerships. In either case, the owner or owners assume full responsibility for the management and most of the labour of the farm. The profit from the business becomes the personal income of the owner or partners.

A partnership may be between a husband and wife, a parent and child, two or more friends, total strangers or any two or more people who agree to work together. The responsibility for the decision making is shared between partners. Disputes arise from time to time, so it is important to build a way to resolve them in the partnership agreement.

Partnerships do not have to be equal, and may work best if the decision making responsibility and profit sharing are based on financial contribution. The profits must be split according to the contribution of each partner.

A corporation is a formal business structure registered under the *Business Corporation Act* of Ontario. Recognized as a “separate legal entity,” a corporation can do anything a person can — including conduct business, buy, own and sell assets, file income tax, have debt and hold mortgages, rent land and/or other assets, and enter into contracts.



Draw up a shareholders' agreement when establishing a corporation. This agreement spells out the responsibilities of each shareholder, the dispute mechanism and possibly the provisions for exiting the business.

Whether planning a corporation, partnership or single proprietor business, entrepreneurs need to develop a good working relationship with business advisors including an accountant and lawyer.

### **Naming the Business**

If a business plans to use any name other than the owner's exact name, it must be registered under the *Business Names Act* with the Ministry of Government Services. In Ontario, an unincorporated business must renew its business name every five years – through a law office, the local Registry/ServiceOntario offices or the ServiceOntario website.

If the owner wants to conduct business, write cheques, bank, etc., in their own name, it is not necessary to register a business name. All net income becomes personal income for tax purposes.

If incorporation is a likely form of business organization, contact an accountant and lawyer for further advice.

### **Crop Production**

There are many things to consider before planting a crop, including the soil, climate and water required for the type of crop to be produced. Here are additional considerations for crop production.

#### **Seed Selection**

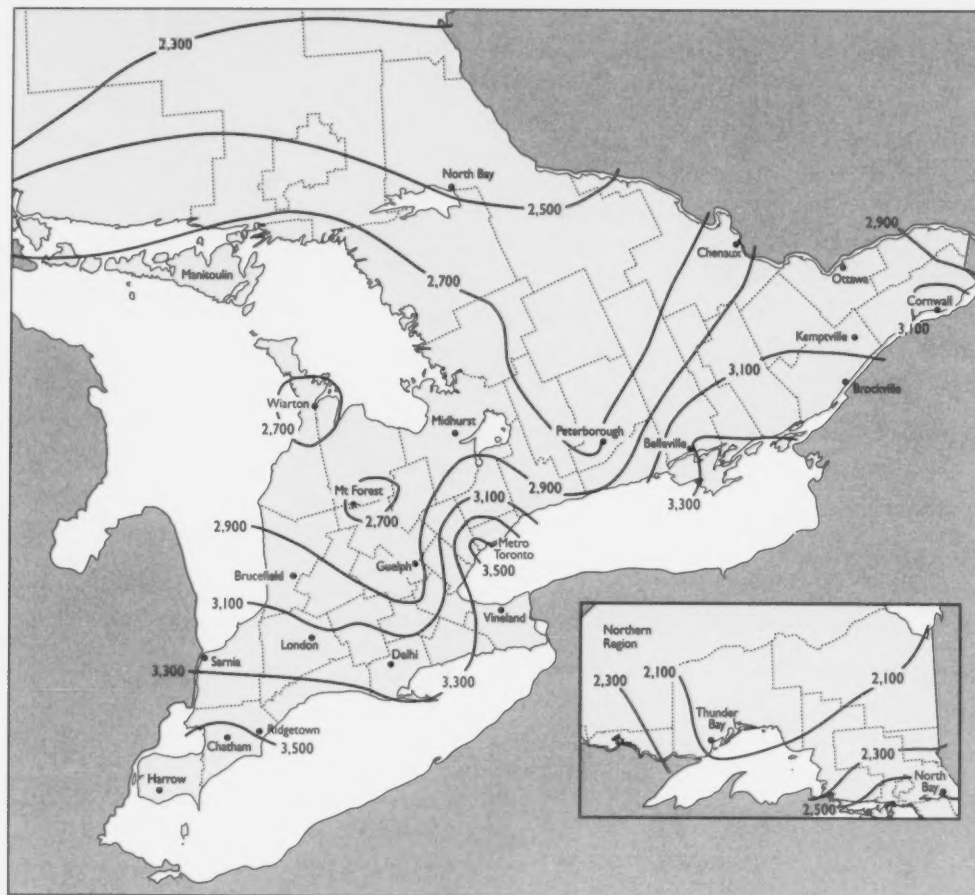
Agricultural seeds have been developed over the past decades to produce a predictable yield and quality of grain or forage. These crops may have specific disease resistance or be adapted to particular climate conditions. For example, some corn hybrids perform especially well in the warm counties of Essex and Kent. Other hybrids, bred for early maturity and cold tolerance, perform well in the cooler Simcoe or Renfrew counties. The location of the farm on the heat unit map (Figure 1) is a good guide for selecting corn hybrids or soybean varieties, and determining if warm weather crops such as tomatoes and peppers are advisable.

Many seeds are hybrids – or have been created by selecting characteristics of other varieties – and perform well for one generation. The resulting plants and grain from hybrid seed have the desired characteristics but do not reproduce true to the variety. That is why growers are advised to only plant seed purchased for the current year's crop from a reputable seed dealer. Buying and planting only certified or registered seed guarantees purity of variety and germination rate under reasonable growing conditions.

Performance trials for agricultural seed varieties are published every year and distributed through industry magazines and farm supply outlets. Additional information on crop production is listed in the resources section.



**Figure 1. Crop Heat Units (CHU-M1) for Ontario**



Source: Weather Innovations Inc. (WIN). This map is based on weather data from 1971-2000 with a common season start date across the province of May 1.

### **Preparing for Planting**

Tillage is any activity that disturbs the surface of the soil. Tillage serves many purposes:

- loosening and aerating soil
- incorporating crop residue, fertilizer, manure and herbicides
- controlling weeds by uprooting
- preparing a seedbed

### **Primary Tillage**

The moldboard plough has traditionally been the first step for seedbed preparation. The plough lifts and fractures the soil, incorporating crop residue, manure and fertilizer. Fall ploughing is easiest to manage for most fine-textured soils (clay, clay loam). Spring ploughing is feasible on most coarse soils (sand, sand loam). Normal plough depth is 15 cm (6 in.). Ploughing at depths greater than 20 cm (8 in.) often results in unwanted mixing of subsoil into the seedbed. The moldboard plough creates the highest risk for soil erosion.



The chisel plough (soil saver or mulch tiller) is also used for primary tillage, but leaves more residue on the surface making it particularly effective on erosion-prone coarse and medium-textured soils. The chisel plow is ideal for reduced tillage situations where manure, fertilizer or herbicides are incorporated. Increased residue helps conserve moisture, mix organic matter into the top few inches of soil, and also reduce tillage costs.

### **Secondary Tillage**

Secondary tillage prepares and levels the soil ahead of seeding. The timing and amount of secondary tillage depends on the season, type of soil, soil moisture and the crop to be grown. Coarse and medium-textured soils seldom require more than one pass with a field cultivator or double disc harrow before seeding.

After seeding small-seeded crops like forages or canola, a smooth or corrugated roller may be used to firm the soil and ensure better contact between seed and soil. The same result is achieved using a seed drill with packing wheels. Rolling or packing is done mainly to conserve soil moisture during dry spring weather, and can lead to soil crusting if a pounding rain follows before crop emergence.

Clay soils that are ploughed in the fall usually require two or three cultivations to prepare the seedbed in the spring. Cultivator teeth should not penetrate more than 7.5–10 cm (3–4 in.) to smooth the soil and leave the seedbed firm. In an Ontario climate, frost action prepares an almost perfect seedbed after fall primary tillage. Spring cultivation allows the ground to warm up more quickly and prepares a firm, level and uniform seedbed so that all seeds are planted at the same depth and have good seed-to-soil contact.

Spring-toothed harrows and cultivators are used to loosen a compacted surface. Avoid cultivating fine-textured soils when they are wet, because the soil structure will be damaged. Coarse sandy soils are not as susceptible to structural damage when tilled at improper soil moisture. Over-cultivation of any soil type reduces organic matter and increases moisture loss from the soil, and increases fuel, equipment and labour costs. Over-cultivation can result in lower yields and returns from crop production.

### **No-Till Systems**

The main purpose of tillage is to prepare a seedbed. In a no-till (zero-till or zone-tillage) system, tillage is not used to prepare a seedbed. A no-till system requires careful attention to seeding equipment performance and crop production details that otherwise would be corrected with tillage, including soil drainage, residue management, weed control, insect and disease control, fertilizer placement and soil compaction.

With low cost of production and soil conservation as goals, farmers and equipment companies have designed equipment to prepare a narrow seedbed, plant the seed and often inject a small amount of plant food (starter fertilizer) in close proximity to the seed, all in one operation.

The success of no-till farming depends on highly specialized planters and skilled operators who understand the needs of the crop they are planting. As the proportion of clay in the soil increases, so does the need for the right machinery and conditions. Many farmers use a combination of minimum tillage and no-till to reduce costs and maximize production. Some farmers find that using a mulch tiller following corn, if soybeans are to be planted, results in a higher yield of beans. No-till is often used for the rest of the rotation.



Advantages of no-till include lower capital investment in machinery, reduced labour cost, improved soil structure and decreased soil erosion. These reduced production costs can be very significant on larger acreages. No-till requires fewer machines than conventional farming, although the cost of individual machines and fuel requirements are high.

Disadvantages to no-till include the high cost of individual machines (especially for small enterprises), the level of knowledge and skill required for success, and the possible lack of understanding by the operator of all of the production technology and science involved. Fertilizer application, weed control and manure disposal are extra challenges in no-till systems.

### **Soil Testing**

Fertile soil supplies most of the essential nutrients required for plant growth. Soil testing, however, provides the best estimate of soil fertility and indicates which nutrients need to be added to meet the needs of the new crop. Test fields at least once every 3 years. Sampling methods are critical, and a poor sample will result in an erroneous and misleading test. Farmers can collect the samples themselves, or hire a crop consultant who includes soil sampling in their service.

Sampling instructions are available from ServiceOntario. Sample boxes and information sheets are available directly from any accredited laboratory and from many farm supply outlets. Sampling tubes can be purchased at many farm supply stores. Accredited laboratories are listed in OMAFRA Publication 811, *Agronomy Guide for Field Crops* or on the OMAFRA website.

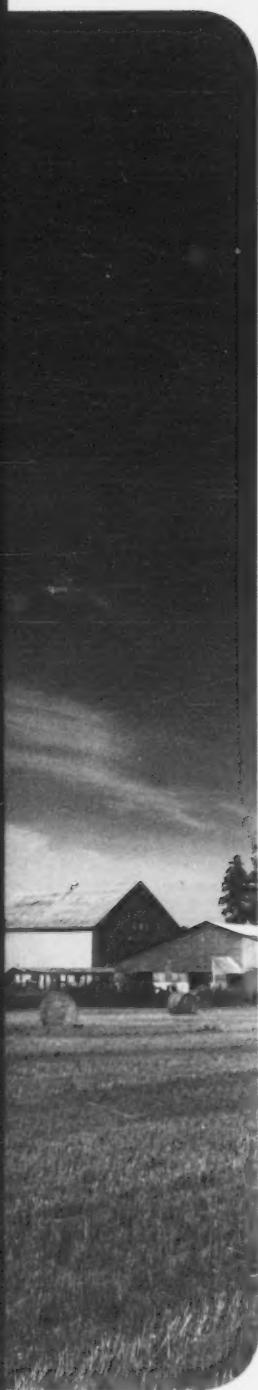
The OMAFRA-Accredited Soil Testing Program provides a reliable basis for making fertilizer recommendations. OMAFRA-accredited laboratories test soil samples for available phosphorus, potassium, magnesium and soil acidity (pH). Recommendations are made for the amount of these nutrients to add for economical production of the specified crop. Recommendations for nitrogen are based on the crop need only, because nitrogen levels fluctuate greatly in the soil in very short periods of time.

### **Major Crop Nutrients**

Nitrogen, phosphorus and potassium are the three main nutrients required by crops.

- Nitrogen promotes plant growth, gives plants a deep green colour and increases protein content.
- Phosphorus stimulates early root development, promotes rapid and vigorous growth, is important for plant seed development and increases winter hardiness.
- Potassium promotes the buildup of starch, increases plant vigour and disease resistance, strengthens stalks, improves seed quality and increases winter hardiness of forage legumes.

These nutrients exist naturally in the mix of minerals and organic matter that make up soil. However, soils may not provide all of the nutrients that modern crop production requires, and are often added through fertilizers, farm manure, unharvested plant materials or inorganic fertilizers.



Major nutrients are supplied, either as fertilizer materials with one or two of the nutrients, or as complete mixed fertilizers with two or all three of the nutrients. The amount of major nutrient in the fertilizer is listed on the bag as a three-part ratio. The first number is nitrogen (N), the second is phosphate ( $P_2O_5$ ) and the third is potash ( $K_2O$ ). A fertilizer listed as 5-20-10, for example, would contain 5% total nitrogen, 20% available phosphate and 10% soluble potash.

The fertilizer material urea contains 46% nitrogen only, and is expressed as 46-0-0. Muriate of potash is 0-0-60, and diammonium phosphate is shown as 18-46-0. Today most fertilizers are blended and sold in bulk to be spread on the field prior to the final cultivation before planting. Blends can be mixed and applied to meet the exact specifications of the growing crop.

Trace minerals are nutrients required in very small amounts by the plant. These are almost always in adequate supply in the soil, but may be deficient in an area for a specific crop. Adding trace minerals is expensive, and may result in toxic levels if applied where they are not needed or in excessive amounts. Always consult a certified crop advisor before adding trace minerals.

### **Soil pH and Liming**

Most Ontario soils are alkaline, but about 10% are low enough in pH that soil acidity could reduce crop productivity. Agricultural lime corrects the acidity of these soils and allows added nutrients to work properly. The lime application rate is determined by the buffer pH. It can take 6–18 months for lime to raise the soil pH, so apply it long before planting a sensitive crop as possible.

### **Manure and Ploughdown Crops (Green Manure)**

Applying livestock manure adds organic matter and plant nutrients (nitrogen, phosphorus and potash) to the soil and helps to build organic matter and maintain a desirable soil structure. Corn, canola and grass hay respond best to the high levels of nitrogen released by liquid livestock manure. When properly applied, manure can significantly reduce chemical fertilizer costs.

Most nitrogen from liquid manure is in a form that evaporates into the air if the manure is left uncovered on the soil surface. Solid manure has the majority of its nitrogen in an organic form which is released over a longer period of time. Solid manure also adds higher amounts of organic matter to the soil.

Apply manure uniformly across the field and incorporate into the soil as soon as possible after it is spread, so nutrients stay where placed and do not move with water. Do not spread manure on frozen ground. Incorporation can be done with any tillage equipment that effectively mixes the manure with the soil.

With a high percentage of tile drained land in Ontario, there is a risk of liquid manure getting into tile drains (through earthworm and root channels or deep cracks in the soil) and contaminating the drainage outlet, waterway or stream. If this happens, farmers may be charged as polluters under the *Fisheries Act* or the *Ontario Water Resources Act*. Apply liquid manure to pre-tilled land (or inject it) or apply at a low application rate.

Underseeding winter wheat with red clover in the spring is a common practice for reducing soil erosion, improving soil structure and adding nitrogen to the soil for the following crop. Clover is usually ploughed down as a green manure crop in the fall, and followed by a corn crop that utilizes the nitrogen.





Use of cover crops is a common soil management practice. Cover crops have many functions including – protection from erosion (rye/cereals), nitrogen production (legumes), nitrogen scavenging (oil-seed radish), weed suppression (cereals or buckwheat), building organic matter and soil structure (plants with fibrous root systems). The cover crop may be a grass, legume or broadleaf, depending on the purpose of the cover crop and compatibility with the following crop. Rye is often sown to cover recently harvested crops on sandy soils. Oilseed radish is sometimes planted to absorb nutrients from fertilizers or manure in the fall. Whatever the cover crop, consider specific farm needs and management, and cover crop characteristics (i.e. will the cover crop become a weed concern?), when selecting a cover crop.

### Weed Control

Weeds are simply plants growing where they are not wanted, so any plant interfering with normal crop production is a weed.

Unplanted land can rapidly become a serious source of weed infestation on adjacent cultivated land. While all weeds are a nuisance, most are easily controlled by cultivation, tilling or by the safe use of herbicides. OMAFRA Publication 75, *Guide to Weed Control* is a comprehensive guide to weed management for Ontario farmers. It is available through ServiceOntario or the OMAFRA website.

In Ontario, only farmers with a pesticide permit can purchase most farm herbicides. To obtain a license, an applicator must successfully complete a Grower Pesticide Safety Course, designed by the Ministries of the Environment and Agriculture, Food and Rural Affairs. To apply for this course, contact the Ontario Pesticide Education Program, Ridgeway College, 1-800-652-8573.

Weeds posing a particular hazard to agriculture are called noxious weeds. The *Weed Control Act* lists 23 noxious weeds, and states, "Every person in possession of land shall destroy all noxious weeds thereon." Under the Act, where land is rented, the tenant is considered to be the person in possession. If the tenant refuses to destroy the noxious weeds, the onus is on the owner to do it. If both refuse, the municipality may destroy the weeds and charge the landowner the cost.

**Table 6. Noxious Weeds**

Bull thistle	Goat's-beard	Poison ivy	Cypress spurge
Canada thistle	Poison hemlock	Proso millet (blackseeded)	Leafy spurge
Common barberry	Johnson grass	Ragweed	Tuberous vetchling
Colt's-foot	Knapweed	Russian thistle	Wild carrot
Dodder spp.	Milkweed	Scotch thistle	Yellow rocket
European buckthorn	Nodding thistle	Sow thistle	

Source: *Weed Control Act*, R.S.O. 1990

## Field Crops

Ontario's wide range of soils, climate and geography support a great diversity of agricultural activities and crop production. Ontario farmers are growing crops for livestock feed and human consumption all across the province. From the deep, limestone-based soils of the Great Lakes Basin in southwestern Ontario with long warm, humid growing season and mild winters, to the shallower, acid lands of the granite-based Canadian Shield, with cold deep loams of the northern clay belts and the sparse pockets of short-season production between Lake Superior and the Manitoba border.

This diversity of crop production capability dictates the kinds of crops that are grown in any region of the province. Generally speaking, the warmth-loving corn, soybeans and soft winter wheat are dominant in the Great Lakes basin of southern Ontario, where summer temperatures and length of growing season approach those of the mid-western United States. In northern Ontario and the inland regions of central and eastern Ontario, the cool-loving grasses and spring grains predominate. Canola, originally bred for the cool prairies, is gaining popularity as a cash crop in parts of Ontario that have less than 2600 Crop Heat Units (CHU).

Farm crops are grouped into three main classifications – forages, grains and oilseeds.

### Forages and Pasture Management

Forages are grasses, legumes and other crops where the whole plant material is grown as feed for horses and ruminant animals (e.g. cattle, sheep and goats). Forages are harvested and stored in a high moisture fermented state as silage, or harvested dry as hay. These crops provide both the roughage feed materials to keep the digestive systems of horses and ruminant animals in good working order, and most of the nutrients and energy required for daily maintenance.

Most farmers grow a mixture of grasses and legumes to provide a balance of nutrients for the animals, and restore nitrogen and structure to the soil. Legumes have the ability to take nitrogen from the air and fix it as nitrates in nodules on their roots. These nitrates become available to other plants for growth, and to soil microbes (bacteria, etc.) that digest the organic plant material into humus, improving the texture and water-holding capacity of the soils.

Alfalfa, birdsfoot trefoil, white clover and red clover are the most common forage legumes. Timothy, brome grass and orchard grass are the most common forage grasses. The species chosen, and the proportion of legumes to grasses used, depends on soil condition, compatibility of the species, method of harvest and the species of livestock to be fed. OMAFRA Publication 811, *Agronomy Guide for Field Crops* contains recommended mixtures for different situations.

Forages may be direct seeded or seeded along with a companion spring cereal crop. Forage seedlings are fragile, slow growing and shade loving, so it is easier to get a successful stand if they are seeded with a cereal crop of oats, barley or wheat. After the cereal crop is harvested either in early July as forage or in early August as grain, the newly established forage crop grows rapidly, providing a dense ground cover for the winter season.



Forage seeding takes place in April or early May, or as early as the soil is workable. Seeding may be possible in early August under certain conditions – but this takes great skill, excellent weed control and a bit of luck in getting good rainfall and warmth in August and September.

Most forage stands are kept for 3–5 years after seeding, or until they become low yielding. Some pasture species, if well managed, may last for 10–15 years without being renewed.

For feed harvested as hay or hay crop silage (haylage), forages are harvested one to three times over the season, usually during early June, July and August. Time of harvest is dictated by their stage of maturity. Grasses reach their peak nutrient content when the seed heads start to appear. Similarly, legumes are at their best just as the first flowers appear. At these stages, harvest yields the greatest nutrient level per hectare of crop.

Ontario's pasture season extends from May to October. Long-term pasture productivity depends on selecting a seed mixture that is appropriate for the field's growing conditions and the livestock species being pastured. Establishing a good stand, properly fertilizing and managing grazing are equally important factors.

The goal of pasturing livestock is to get the most production from the animals, and is accomplished only if you get the most production from the grasses. The number of livestock must match the productive capacity of the pasture, with the pasture growing at its fastest rate.

To do this, follow a rotational pattern. Use different fields or divide the field with electric fencing. Animals are given access to the pasture when it has 15–25 cm (6–10 in.) of growth and rotated to another field when it is eaten down to about 10 cm (4 in.). These pasture heights vary with the species and type of livestock being grazed.

Once grasses form heads and set seed, the nutritional content drops rapidly and the plants stop growing. If uneaten grass is left on the pasture, clip it back so the field continues to re-grow uniformly. The clippings may be taken off as hay and fed through the winter months. Continue this rotational pattern throughout the season. Good cattle on well-managed pasture can gain up to 160 kg (350 lb) or more each in a season, that is 400 kg (880 lb) of gain per ha.

Joining a local Soil and Crop Improvement Association helps new farmers learn more about efficient and profitable crop production practices.

## **Grain Crops**

### **Corn**

Corn is one of Ontario's most important field crops. Corn is planted in the spring and harvested as whole-plant silage for livestock feed in September or as grain in October and November. Grain corn is used both as livestock feed and in the production of breakfast cereal, alcohol, sugar, starches and other byproducts. Sweet corn is for direct table human consumption.

### **Oats and Barley**

Oats and barley are spring-planted grains used mainly for livestock feed. Some oats are grown on contract to cereal makers, which may specify varieties and market qualities. Straw from oats and barley is used for livestock bedding. In some areas of Ontario, oats and barley are planted together as "mixed grain" for livestock. As indicated in Table 7, this practice has no advantage in yield or feed quality over barley alone on well-drained soils. Under conditions of imperfect drainage, the oats may fill in on wetter areas where barley does not grow as well.



### **Wheat**

Winter wheat is planted in Ontario between mid-September and late October, and harvested in late July or early August. Three main classes of winter wheat are grown – soft white, soft red and hard red. Although a small amount is used for livestock feed, soft varieties are usually grown for pastry flour, and hard wheat for bread flour. Because of its value in the marketplace, and certain feeding characteristics, wheat is not used as livestock feed unless it is downgraded because of quality.

Spring wheat varieties are planted between mid-April and mid-May, and harvested in August. Most spring wheat is the hard red type, used for making bread flour. It is grown only in the central, eastern and northern parts of the province where spring and early summer temperatures are cooler. Wheat straw is used as livestock bedding and for mulching in small fruit production.

Wheat can be marketed through the Grain Farmers of Ontario, local grain elevators/dealers and/or direct to the millers. A producer number is required from Eleview before selling wheat to a licensed elevator or processor. Eleview centralizes grain sale reporting in Ontario. Local elevator operators or the Grain Farmers of Ontario can explain details of the various marketing plans available.

### **Rye**

Rye is grown in Ontario primarily as a cover crop by tobacco growers and a rotational crop by potato growers. Rye is also used by the distilling industry, and to a small extent for livestock feed. Rye is planted in the fall and either ploughed down as green manure in the spring or harvested as grain in July.

### **Oilseed and Other Crops**

#### **Soybeans**

Soybeans, Ontario's largest oilseed crop, are planted in May after the greatest frost danger is past, and harvested in September-October. Soybeans are grown primarily for oil content, but the soybean meal byproduct is an important protein supplement for livestock. Soybeans can also be heat treated or roasted and fed directly to livestock as a protein and energy supplement. Untreated beans can be fed in limited quantities to cattle. Soybeans are marketed through various local dealer channels.

#### **Canola**

Canola is grown primarily for its oil content, with the meal byproduct used as a protein supplement. Most canola is the spring type, seeded in April-May and harvested in August-September. A very limited acreage of winter canola is planted in late August and harvested the following July. Spring canola performs best in the cooler parts of western Ontario or in northern Ontario.

#### **White and Coloured Beans**

White and coloured beans are grown for human consumption. These crops are planted in late May to early June, and harvested in late August-September. White beans are mostly grown under contract to a licensed grain dealer or marketed through the Ontario White Bean Producers' Marketing Board. Coloured beans are usually grown under contract to a licensed dealer specializing in specific coloured bean species.





**Table 7. Common Field Crops**

Crops	Typical Seeding Rate		Approximate Planting Date	Approximate Harvest Date	Average Yield	
	lb/acre	kg/ha			lb/acre	kg/ha
Grain corn	16	18	May	October-November	5,810	6,510
Oats	85	95	late April to early May	August	2,040	2,280
Barley	120	135	late April to very early May	late July-August	2,880	3,220
Winter wheat	105	115	mid-September to mid-October	late July	3,360	3,760
Mixed grain	100	115	late April to early May	August	2,520	2,820
Soybeans	90	100	mid-May to early June	October	2,180	2,450
Canola	4.5	5	late April to early May	late July to early August	1,900	2,090
Field beans	Varies significantly by seed size		late May to early June	late August to mid-September	1,800	1,980

Conversion: kg/ha = lb/acre x 1.12 lb/acre = kg/ha x 0.89

## Horticultural Crops and Enterprises

Regardless of the horticultural crop grown or scale of the enterprise, controlling pests and diseases, good crop management, and sound marketing and economic practices are essential for success. The following sections provide some additional insight on how and where to grow horticultural crops in Ontario for best results.

### Greenhouses

Success in the greenhouse business requires:

- a well-defined market
- a good location with the necessary amenities – supply of high quality water, energy source, electrical supply and easy access to transportation
- significant start-up and operating capital
- a well-planned production system
- people skills
- experience dealing with the “mechanical” necessities of the business – including complex heating, lighting, ventilation, growing and watering systems

Once the greenhouses have been built, heat and labour are the owners’ biggest costs.

Greenhouse coverings include permanent materials, glass and acrylic or double layered polyethylene film, which must be replaced every 3 years. Each type of covering has advantages and disadvantages, but all three coverings allow for successful production. Greenhouse production – whether using hydroponics, soil or artificial growing medium – requires plenty of high quality water to keep plants growing and manage the root zone environment. Depending on cropping system and months of production, 0.7–1.5 m of water is required per square metre of greenhouse production area. Several sources of clean water are recommended to ensure adequate supply. Dirt or excess minerals clog mist or drip irrigation nozzles.



An emergency power source is required to supply electricity to operate heating, ventilation and irrigation systems, and their computerized controls during power failures. Ensure the generator capacity is a size and type that accommodates the needs of the greenhouse, and perhaps the operator's home on the same property.

The main greenhouse vegetable crops are tomatoes, cucumbers, sweet peppers and lettuce. Oriental vegetables, hot peppers, eggplants and even strawberries are also being grown in greenhouses. Produce is mostly sold to packers/shippers or the wholesale market for distribution through grocery stores, and fruit and vegetable markets. Greenhouse vegetable enterprises larger than 464.5 square metres (5,000 square feet) in area are required to be a member of the Ontario Greenhouse Vegetable Growers. This organization represents growers when dealing with government agencies, assists in advertising and supports research.

Greenhouse flowers include cut flowers and a vast array of flowering potted plants, annual and perennial bedding plants. These products are marketed through the wholesale market (supermarket chains, garden centres and florists) or directly to the consumer. Flower growers with more than 1,858 square metres (20,000 square feet) are required to be a member of Flowers Canada Ontario, the organization representing the industry with a focus on marketing and research. Quality plants and effective marketing are critical to success because consumers purchase floral products with discretionary income.

Integrated pest management (IPM) is a process where growers systematically check their fields for crop pests and problems, and implement a planned system of prevention and control for these pests. An IPM program controls pests and diseases in the greenhouse, and provides a high quality product for the marketplace. The use of biological control agents is often a critical component of a successful IPM program.

On a small scale, greenhouse growers usually access consumer markets directly, growing all or any of the vegetable crops, some flowers, potted plants and bedding plants.

### **Greenhouse Wastewater**

Part of the planning process should be consideration for the handling of wastewater. Wastewater must be handled in a manner that will not harm the environment. Specific requirements on the treatment and disposal of this material exist under the *Ontario Water Resources Act* and the *Nutrient Management Act*.

### **Market Gardening**

Land requirements for growing fruit and vegetables for the fresh produce market can range from part of a hectare (or acre) to hundreds of hectares (or acres). Customer demand, knowledge of the operator, availability of capital, and equipment and irrigation water determine the size and type of enterprise to be established.

Although knowing your market and how to sell your product are top priorities in the market garden business, pest control is the downfall of many new gardeners. Insects, diseases and weeds are relentless. The crop can also be affected by weather, pesticide drift and other disorders not caused by pests. Learning to manage pests and disorders will result in higher yields and better quality produce.

There are many crop and pest management programs and publications offered by government and private industry. Information and manuals for some specific crops are available from ServiceOntario and the OMAFRA website.

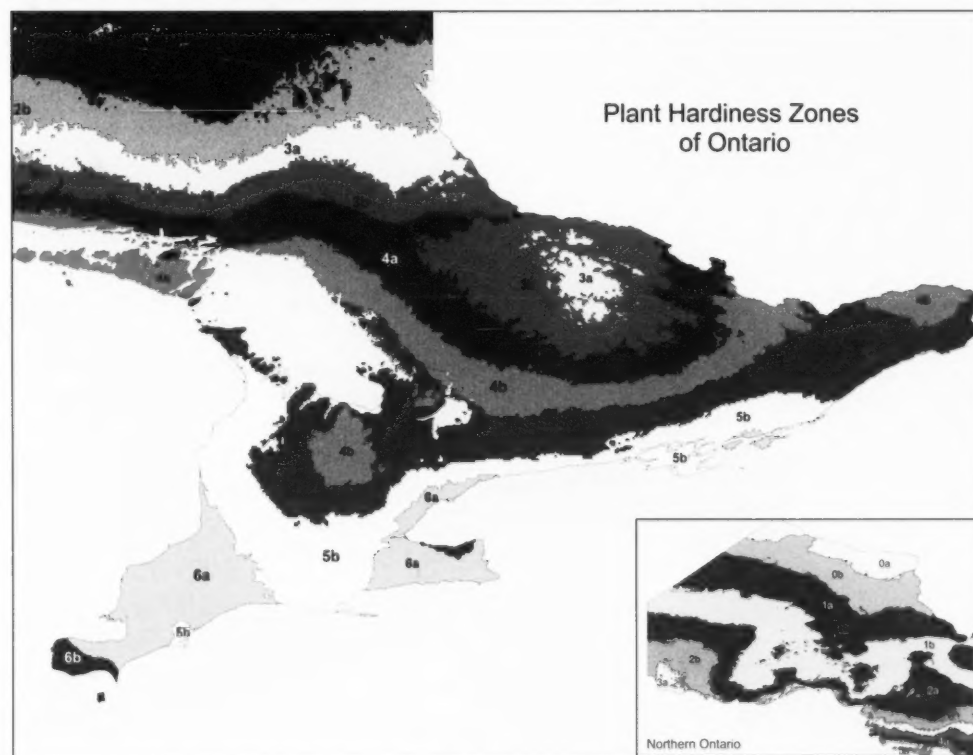


Minimum winter temperatures restrict the growing of tree fruits and edible nuts to certain areas of southern Ontario. Some produce species, such as cole crops (cabbages, broccoli, cauliflower and brussels sprouts) perform better in cooler climates, or late in the season. Tree fruits perform best in areas near Lakes Erie and Ontario, and in a small microclimate near Georgian Bay where apples and pears do well. Nut trees are farmed on a small scale in the Carolinian Forest area south of a line from the Niagara peninsula to Grand Bend and Goderich on Lake Huron. Knowing the hardiness characteristics of the various species is important if a good supply of quality produce is to be offered consistently from year to year.

North America is divided into plant hardiness zones. In Ontario, there are seven hardiness zones, and each zone is divided into two subcategories (a and b). Figure 2 illustrates the plant hardiness zones of Ontario. The zones map out where various types of trees, shrubs, plants and flowers are most likely to survive. These zones are based on factors including minimum temperature during the winter, number of frost-free days, summer rainfall and wind conditions. Areas in the north are given a lower hardiness rating or number. Ratings generally increase as you continue south.

Hardiness ratings are intended as guidelines only. Many plants are grown in areas beyond their hardiness rating where a warmer microclimate exists (e.g. a south facing area with wind protection).

**Figure 2. Plant Hardiness Zones in Ontario**



Drainage, climate and the nature of the marketplace are very important items to consider when choosing varieties and species to grow. For the small market garden that sells direct to consumers, marketing principles are as important as production skill. Selecting and growing produce species that result in greatest return on investment, and using growing and marketing



techniques to attract and bring back customers are essential to the growth and success of the market garden. In market gardening, the opportunity for success or failure is highly dependent on the grower's marketing skills.

**Table 8. Common Market Garden Crops**

Crop	Typical Planting Rate ha (acre)	Seed or Transplant	Years to Full Production	Average Yield per ha (acre)	Annual Labour hr/ ha (acre)	Soil Required
Strawberry	17,290 plants/ha (7,000 plants/acre)	transplant	2-3 (1 year for day neutral berries)	8,400 kg/ha or 16,800 L/ha (6,000 quarts/acre or 7,500 lb/acre)	1,250 hr/ha (506 hr/acre) for commercial 353 hr/ha (143 hr/acre) for PYO	well-drained, high in organic matter and fertility
Raspberry	5,434 plants/ha (2,200 plants/acre)	transplant	3	2,268 kg/ha or 3,780 L/ha (2,700 pints/acre or 2,025 lb/acre)	1,550 hr/ha (627 hr/acre) for commercial 524 hr/ha (212 hr/acre) for PYO	deep, well-drained, high in organic matter
Highbush blueberry	1,976-3,359 plants/ha (800-1,360 plants/acre)	transplant	4 years to first crop, 9 years to full yield	4,145-5,600 kg/ha or 8,400-11,200 L/ha (3,700-5,000 lb/acre or 6,000-8,000 pints/acre)	146 hr/ha (59 hr/acre)	acidic, well-drained, high in organic matter
Fresh market sweet corn	11.25-17.5 kg/ha (4.5-7 kg/acre)	seed	annual	2,000-2,500 dozen/ha (800-1,000 dozen/acre)	127.5 hr/ha (51 hr/acre)	well-drained
Squash/pumpkin	3.75-4.5 kg/ha (1.5-1.8 kg/acre)	seed or transplant	annual	2,500 pumpkins/ha (1,000 pumpkins/acre)	50 hr/ha (20 hr/acre)	well-drained
Fresh market tomato	12,500-20,250 plants/ha (5,000-8,100 plants/acre)	transplant	annual	18-32 tonnes/ha* (8-14 tons/acre*)	450 hr/ha (180 hr/acre)	well-drained
Fresh market sweet pepper	~27,500 plants/ha (~11,000 plants/acre)	transplant	annual	13-18 tonnes/ha* (6-8 tons/acre*)	787 hr/ha (315 hr/acre)	well-drained
Christmas trees	1,975-3,700 trees/ha (800-1,200 trees/acre)	transplant	7-12 years	1,235 - 2,370 trees/ha (500-960 trees/acre)	270 hr/ha (110 hr/acre)	well-drained

\*Estimates only.



### ***Scheduled Planting***

Planting can be scheduled to spread harvest out over the season and have produce available at specific times. Twelve thousand cobs of corn all ready to harvest within a five-day period is a lot of corn to pick and sell. Using different varieties, different planting dates, or a combination of the two, extends the selling season. With tomatoes, for example, plant varieties with different maturities at the same time. With sweet corn, use a combination of early-season and later-season corn, and different planting dates to assure marketable corn at all times from mid-July to Thanksgiving.

### ***Irrigation***

Irrigation is critical when growing fruits and vegetables – an adequate source of water close to the planting site is essential. Each type of irrigation system has advantages and disadvantages. For example, trickle or drip irrigation systems are often chosen when water use efficiency is a high priority. Consult the Best Management Practices manual on irrigation management to learn about the choices in irrigation systems. You may need to consult an irrigation systems company for advice on designing your system.

A Permit to Take Water is required from the Ontario Ministry of Environment (MOE) if more than 50,000 litres per day is used for irrigation purposes. This permit applies whether the water source is a lake, stream, river or private pond. There are very few exceptions to this regulation. Contact your nearest MOE office for more information.

### ***Labour for Market Gardening***

- Consider the availability of reliable or experienced labour when determining the mix of crops to grow. Will the farm need to rely on hired labour for some operations?
- When will this labour be required?
- Will the farm be able to offer steady work through the season, or will there be weeks of intense activity (e.g. planting, harvest) between periods where hired help is not required?
- Some fruits and vegetables are more labour intensive than others – how much are you willing or able to do yourself?

Even pick-your-own (PYO) enterprises require labour to erect signs and directional ropes, deal with customers to figure out payment and assist them with check-out, collect fees, maintain the crop and monitor the pickers. Proper training, supervision and rewarding of the labour force pays off in fewer labour problems and more satisfied customers.

Good marketing means good customer service. Ensure the most congenial employees have the most contact with customers. How they meet and serve people may determine the operation's success or failure. Training and monitoring employees is simply good business.

Regular field monitoring plays an important role in market gardening. To ensure good pest control, managers watch the development of their gardens daily, and take actions to correct any problems that develop. This action includes noting the optimum time to harvest each individual crop or row so it can be sold at the peak of quality.





### Storage

The secret of fresh is cold. Chilling a product reduces the rate of ripening, holding the flavour and tenderness longer. These are qualities your customers want. Elaborate cold storage units are expensive to build and operate, but small homemade units are quite within the range of the inventive market gardener. The used cargo box from a refrigerator van, outfitted with a manual or timed sprinkler unit and appropriate drainage, is quite serviceable for the smaller market gardener. Different crops have different temperature requirements for storage. Tomatoes, peppers and melons must be stored at temperatures above 10°C, while onions and leafy greens are stored at much cooler temperatures.

### Marketing Produce

The production and business factors influencing your enterprise depend on your market. Fresh market (retail or wholesale), pick-your-own (PYO) and processing all have different requirements. Whether you are selling to a wholesaler, providing direct store delivery, selling from a roadside stand or running a PYO business, a consistent supply of quality product delivered on-time is essential to maintaining your markets.

When planning a market garden, consider what, where and how the product will be sold, who and what the competition will be, which factors bring the customers in and the suitability of the location. It's a good idea for the new market gardener to visit successful on-farm markets and PYO businesses to observe facilities that work, and marketing practices that attract and keep customers. An on-farm food safety plan is also important to produce, process, handle and store food to prevent or reduce any danger to human health. Consider the safety risks and hazards involved with your business venture and how to best manage these.

Roadside stands and PYO enterprises provide an opportunity for higher-than-wholesale earnings. A good marketer can earn a reputation for quality produce, and customers are willing to pay more for good value. Direct selling brings cost savings on labour, containers, storage, packaging, commissions and transportation.

Effective advertising attracts customers out of curiosity the first time. Quality and service brings them back. Do not forget that buildings, parking areas and even washrooms help make your place of business a pleasant shopping experience.

Regulations are in effect regarding signage, roadside parking and entrances to the place of business. The governing body responsible for the roadway administers these regulations. If you are on a provincial highway, clear your plans with the Ontario Ministry of Transportation. Otherwise, check with your municipality or regional government.

Every business manager also deals directly with customers. PYO customers often look for a family outing as well as fresh, top-quality food. In contrast, wholesale distributors provide an opportunity to move a large quantity of product quickly. They provide most of the marketing services required, in exchange for a share of the revenue.

Many new growers are considering "value-added" ventures such as pickles, salsas or other canned goods. Rules and regulations need to be researched when exploring a value-added venture involving people, food and processing. Visit the OMAFRA website to learn more about what is required for a new business venture.





### Organic Production

Organic farming is a holistic production system with a primary goal to optimize the health and productivity of interdependent communities of soil life, plants, animals and people. Organic production promotes the use of crop rotations and cover crops, and encourages balanced host/predator relationships. Soil organic matter is maintained by the addition of compost and farm manures, plant residues and diverse crop rotations that include cover crops.

The organic farm should be certified by an organic certification body (CB) and all inputs used on certified organic farms must be approved by the CB to ensure the inputs meet the requirements of the Canadian Organic Standards. This includes “natural” or non-synthetic pest management products and soil amendments and fertilizers allowed by the standards, and registered for that specific use according to federal or provincial regulations.

Livestock must be fed a ration of all organic feed (grains, forages and protein supplements) and have access to outdoors and pasture whenever weather is suitable. Animals must be raised as organic from before birth (last third of gestation) or from one day old for poultry.

Organic standards do not permit the use of synthetically compounded mineral fertilizers or pesticides, growth regulators, antibiotics, hormones, genetic engineering (GMO), cloning of animals, nanotechnology, ionizing radiation or artificial additives in the production and processing of organic food products.

To qualify as organic, the farm or production unit must be “certified organic” by one of the CBs accredited according to requirements of the Canadian Organic Products Regulations (2009) as enforced by the Canadian Food Inspection Agency. The Canadian Organic Standards gives guidance on what is required to produce and process organic products in Canada. There are several organic certification bodies that certify farms and food processors in Ontario and across Canada. There are also several organic farm associations such as Canadian Organic Growers or Ecological Farmers Association of Ontario that offer courses, magazines and other information services to their members on how to grow organically.

The land which organic products are produced on must be managed as organic (according to the standards) for at least 36 months prior to the harvest of organic products. For livestock, this period is usually longer to accommodate feeding only organic feed to the animals.

Producers who want to develop organic food enterprises should research the requirements of the standards, production methods and available markets for organic products. Producers must learn a great deal about controlling weeds, diseases and pests by organically appropriate methods, and about the marketplace for organic foods. Marketing organic products is often more time consuming than for non-organic products as the marketing infrastructure is not as well developed.

There is more information on producing organically on the OMAFRA website.



### Nursery and Landscape Plants

Growing ornamental trees and shrubs appeals to many rural landowners. On the surface, planting small trees and shrubs, allowing them to grow and selling at a higher price appears to be an easy way to make a living. Of course, it's not quite that simple.

Like every new enterprise, entrepreneurs must consider which species to grow and who they will sell to. Will they be grown in the soil or in containers? Will this enterprise supply landscapers, garden centres or sell directly to the consumer? If selling to landscapers or garden centres, what does it take to become a supplier? If selling direct, why will customers buy from the farm rather than an existing retail garden centre?

People shopping at a nursery may like to look at a variety of ornamentals, including evergreen and deciduous trees, shrubs, perennials and annuals. The trip to the nursery is a shopping experience, not simply a purchasing trip. What does this new business offer as a competitive advantage over the existing retail garden centre?

Level, sandy loam soil with good drainage and no wet pockets is ideal for nursery production. This type of land facilitates rapid growth and easy digging of field grown plants. Level ground is less subject to water erosion, but wind erosion is still a threat. Many growers plant windbreaks around the fields to reduce wind speed.

Container production of nursery stock in soil-less media is a popular production method in the nursery trade. This method facilitates handling and year-round harvest, and creates a compact root system to improve transplanting survival. Facilities and equipment for mixing and handling potting media ingredients are a necessary part of this enterprise. Container growing involves some technologies that are different from field growing. New entrepreneurs must learn about the special circumstances (e.g. overwintering needs), equipment and labour requirements when considering a container production system.

The nursery farm should be located in a hardiness zone compatible with the plants grown, and on land with a soil pH between 6.0 and 7.5. These conditions will ensure that most plants can thrive under local conditions. Species that require very acid soils can be grown in containers or purchased for re-sale from other wholesale nurseries. Beginning nursery managers may be wise to not push the limits of plant hardiness range or pH, until they gain experience with the plants.

Access to good quality irrigation water is essential for nursery production. Always test potential sources of irrigation water before use. Water tests include pH, bicarbonates, electrical conductivity (EC), and salts such as sulphates, sodium and chloride. There are several types of irrigation systems available to growers. Talk to an irrigation consultant to plan the system. A Permit to Take Water, as discussed previously, may be necessary.

An Integrated Pest Management (IPM) program, which includes regular monitoring of production areas for weed, disease and pest problems, is necessary for producing quality nursery plants.

Humber College, the University of Guelph and the Niagara Parks Commission School of Horticulture offer practical courses in plant production and maintenance. Home study courses in nursery production, business development and marketing are also available. Information on the production and maintenance of nursery crops in Ontario can be found on the OMAFRA website.



## Livestock Enterprises

New livestock farmers have choices about the type of livestock to raise and the intensity of their enterprise. They may choose commercial production, raising show or breeding stock, or simply raising livestock as a hobby, mainly for their own use and enjoyment. Regardless of the type of production, all animals must be kept and raised with proper care. Farmers must follow the codes of practice established for animal health and welfare. Links to helpful sites are included under animal health and welfare in the resource section.

Hobbies sometimes turn into commercial ventures. A livestock enterprise often begins as a part-time business, selling excess animals, and then graduates to full time as production intensity and markets develop. Showing livestock at fairs and exhibitions may start as a hobby, but is often practised by producers of purebred livestock as a means of advertising their stock.

Livestock shows are a good place for the new farmer to become acquainted with the various breeds of livestock, but are not helpful in understanding commercial production techniques. New farmers benefit from visiting demonstration farms and open houses, commercial trade shows and commercial farms. Phone ahead before visiting a farm to ensure a visit is welcome and will not interfere with normal operations.

Many commercial livestock farms, especially poultry, pork and dairy, do not welcome visitors because of possible disease transmission on clothing, especially footwear. Some require visitors to wear special clothing and boots, or shower before entering facilities. This is a precaution taken by every visitor, consultant and worker on these farms, so visitors should not take offence if asked to do so.

## Breeding Livestock

Each species of livestock has its own reproductive characteristics. Within species, some breeds have adapted differently over time, becoming more prolific than others. Modern livestock managers have learned ways to take advantage of these breed and species characteristics for profit.

Table 9 shows the general pattern of heat periods (estrus) for the main livestock species, and the length of gestation period for each.

**Table 9. Estrus Periods and Gestation of Farm Animals**

Species	Estrus Frequency	Time of Estrus	Gestation Period
Cattle	18-24 days	all year	279-290 days
Sheep	14-19 days	early fall through early winter	144-151 days
Goats	20-22 days	early fall through early winter	147-153 days
Swine	20-22 days	all year	112-117 days
Horses	21-22 days	May-July	330-345 days

Source: Adapted from *Merck Veterinary Journal*, 3rd Edition, Merck Co., Inc.



### Feeding Livestock

Feeding livestock is a scientific and complicated process. The feed requirements of young animals, mature or high producing animals varies greatly. If you understand a few basic principles, practical feeding practices become much clearer.

Proteins are the building blocks of muscle tissue, and the daily requirement for protein increases during periods of rapid growth, reproduction and production. This requirement decreases as animals mature and when market animals are approaching market weight. The proteins of each plant are different, and the type of protein needed by each species of animal and poultry is different. Consult a nutrition advisor before deciding if protein supplements are needed and which ones to use.

In addition to protein, animals require energy, vitamins and minerals. This is particularly true for young animals, during the last one-third of pregnancy when fetuses are developing rapidly, periods of high production and periods of rapid growth. During these times, grains and supplements need to be increased.

Mature animals that have finished their growing stage require less energy. This need can be achieved by reducing the total intake of feed, especially grains and oilseeds, or by changing the proportion of high-energy and low-energy feeds in the ration. Excess energy is stored as fat, especially during times when growth, weight gain or work is reduced.

Livestock need salt, mineral and vitamins in their diet. Provide free choice vitamins, minerals and salt for ruminants at all times. These may be blocks (also called licks) or as granular mixes placed near the water sources. Additional salt, minerals and vitamins may be added to the grain mix if this is being fed. For swine and poultry, salt, mineral and vitamins are always added to the feed mix.

All classes of livestock need clean water at all times. Water is perhaps the most important factor for maintaining good health status of the animals. Check water at least daily to ensure it is clean and fresh, and has not become contaminated or dirty.

Animals are classed into three types based on the physiology of their digestive systems – ruminants, monogastric or single-stomached animals and hindgut fermenters. Ruminants have a four compartment stomach, the largest is called the rumen. This type of stomach is adapted to digesting large amounts of fibrous feeds, known as roughages. These animals include cows, sheep, goats, deer, elk and bison (buffalo), and they all chew their cud. Their basic diet includes grasses and legumes, supplemented with grains during periods when they need more energy and oilseed meals when they need more protein. Vitamins and minerals are added to maintain health.

Monogastric animals, like pigs and poultry, do not have the capacity to digest large amounts of fibre. Their diet consists of high-energy grains, balanced with oilseed meals to meet their protein needs. Minerals and vitamins are added for structural soundness and health maintenance.

Horses and rabbits are hindgut fermenters. Their digestive system is different from other single-stomached animals. Their need for a high-fibre diet is a result of a highly developed large intestine, or colon, rather than the stomach. Their diet is more closely related to that of a ruminant than a pig.

With this basic understanding, farmers should develop a close relationship with a livestock advisor or nutritionist and feed company representative to formulate a complete feeding program for their particular type of livestock.





## Manure and Deadstock

Manure management and livestock mortalities are inevitable parts of raising and dealing with livestock.

### Manure

Manure can be a valuable fertilizer resource to a farm operation. It can be handled in a variety of ways but systems are typically classified into solid and liquid. Each manure handling system has its own characteristics, and there are many planning points and considerations for a new producer. Ask yourself:

- What do you plan to do with the manure?
  - Do you have adequate storage to maximize the fertilizer value of manure?
  - Do you have an adequate land base to spread the manure on?
  - How do you manage runoff from livestock yards and uncovered manure storages?
  - How are you going to handle the manure?
  - Will you buy equipment or hire a custom operator to spread the manure?
  - Have you looked into whether you require a nutrient management strategy or plan?
- If you are planning to build or expand your livestock barn or manure storage facility, and your farm has greater than five nutrient units, an approved nutrient management strategy is required prior to starting construction.

New producers need to look to the *Nutrient Management Act* to find out their responsibilities. OMAFRA has many factsheets and resources, including environmental specialists, to help in this capacity. The Environmental Farm Plan program is a great tool to help new and established producers assess the environmental performance of their operation and their farm site.

### Deadstock

Producers make every effort to reduce death losses, but it is still inevitable and a fact of livestock farming. Producers must equip themselves with knowledge, proper planning and the technology to deal with dead farm animals (deadstock).

Disposal and management options are outlined in Ontario Regulation 106/09 under the *Nutrient Management Act, 2002*, which deals with on-farm disposal of deadstock and Ontario Regulation 105/09 under the *Food Safety and Quality Act*, which deals with off-farm disposal (i.e. through a licenced collector). These regulations incorporate standards designed to protect the environment, animal health and the food supply. On-farm options include:

- pick-up by a licensed collector service
- composting
- incineration
- disposal vessel
- burial
- anaerobic digestion
- delivery to a licensed disposal facility
- delivery to an approved waste disposal site
- delivery to a licensed veterinarian for post mortem





Producers must be familiar with the specific requirements under the regulation(s) for their preferred option of managing deadstock before dealing with an actual livestock mortality. Producers are required to keep written records about deadstock disposal for a minimum of two years. Further information regarding deadstock handling and disposal options are on the OMAFRA website.

### **Dairy**

Producing milk requires a very high level of capital investment and management skills. Dairy cattle nutrition and management is a precise mix of science and art. The inability to provide this skill results in unhealthy animals and unsaleable milk. Milking and other daily chores must be completed on a very regular schedule, to maintain the health of the milking herd and the production level needed for economical performance. Dairy farming is rarely a viable part-time enterprise.

Farm management records of dairy businesses suggest that skilled dairy farmers need at least 60% equity to have reasonable expectation of financial success.

Dairy farmers must purchase the right to ship milk from cows (i.e. dairy quota) from the Dairy Farmers of Ontario (DFO) before any milk is sold. Producers are paid based on the amount of butterfat, protein and other milk solids marketed. The cost of purchasing quota is a major factor when considering a dairy enterprise. Entrepreneurs who are seriously considering entering the dairy business should contact their local DFO field person through the Dairy Farmers of Ontario.

### **Milking Centre Washwater**

Part of the planning process should be consideration for the handling of wastewater. Wastewater must be handled in a manner that will not harm the environment. Specific requirements on the storage, handling, treatment and disposal of this material exist under the *Ontario Water Resources Act* and the *Nutrient Management Act*. In addition, information relative to milking centre washwater can be found in the OMAFRA factsheet *Handling Milking Centre Washwater in an Environmentally Responsible Manner*.

### **Dairy Breeds**

Holstein cattle make up a vast majority of dairy cattle in Ontario. They are large cattle known for their ability to produce large quantities of milk. On average, Holstein milk contains about 3.7% butterfat.

Jersey cattle are tan, brown or brown and white cattle, and smaller in stature than Holsteins. They produce less milk that averages 4.8% butterfat. Recent advances in breeding have greatly increased both the size and production of Jersey cattle.

Ayrshire, Guernsey, Brown Swiss and milking Shorthorn cattle make up the balance of dairy breeds in Ontario.

### **Beef Cattle**

Beef farming is divided into three types of enterprises – cow-calf, growing and finishing. Cow-calf is the breeding, birthing (calving) and growing of calves to weaning age. The growing enterprise takes the calves to the next size level, ready to be fed for market. Finishing is the final stage of preparation for market as beef. All meat sold in Ontario must be processed in a provincially or federally inspected packing plant. Any meat sold to another province



or country must be processed in federally inspected facilities. Imperial measurements are the common units used by the beef industry for describing animal weights and sale prices. To convert, 1 lb equals 0.453 kg.

Another type of beef farming is production of purebred or crossbred breeding stock, used in commercial herds. A great deal of experience through contact with this segment of the beef industry is needed before entering this type of business, so new farmers will need to gain this first.

### **Beef Breeds**

Beef producers have a choice of traditional breeds of British origin – Shorthorn, Aberdeen-Angus and Hereford – and the leaner, faster-growing Continental breeds – Charolais, Simmental, Limousin, Maine-Anjou, Blonde d'Aquitaine, Salers and Gelbvieh.

The British breeds are known for their ease of management, ability to make good gains on low-cost forages, good marbling characteristics and excellent meat flavour. The Continental breeds are renowned for rapid growth, good muscle development and leanness. Commercial herd managers usually crossbreed the Continental breeds with the British breeds, aiming to gain the maximum advantage from each. Crossbred calves grow faster and more efficiently than the average of their parents – a genetic phenomenon known as heterosis or hybrid vigour – and normally bring higher prices at the sales yard.

### **Cow-Calf**

The goal of the cow-calf operator is to provide a large, healthy calf at as low a cost as possible at weaning time. This involves selecting strong, good-milking cows that calve easily without human assistance, and breeding them to the type of beef bulls that give the kind of calves most desired by the finishers.

For commercial production, this generally means cross-breeding the cows to bulls of a different breed. Calves are usually sold after weaning at six to seven months (500–700 lb) or as yearlings (800–1,000 lb). A good set of cattle scales and a handling facility for easy, safe sorting and handling are basic tools for good production and business management on a beef farm.

Deciding which breeds to cross is a matter of knowing the market. Feedlot managers want large-framed calves that are lean and muscular, and ready for market at 1,200–1,400 lb. To reach this goal, the commercial cow-calf owner establishes a herd of cows that milk well and are good mothers, and a herd sire with good growth and carcass qualities. One example is Hereford-Simmental crossbred cows, bred to a Charolais bull. This cross yields a growthy, buckskin-coloured calf with good carcass qualities. Colour makes no difference to the meat quality, but may be more popular with buyers. Other breeds can be used successfully as well.

Toward the end of the weaning period, calves are usually introduced to a small amount of grain-based feed in an area where their mothers cannot go, called a creep. Creep feeding starts the calves eating solid feed before they are weaned, reducing the shock of weaning, produces bigger, stronger calves at sale time, and prepares the calf for full feeding in the feedlot.

When sending calves to market, there are four key points to remember.

1. The main factors that determine price are frame size, breed-crosses, body condition and health of the calves. These are indications of the ability of the calf to grow quickly and efficiently. Feedlot buyers expect the calves to be vaccinated.



2. Castration and dehorning are necessary. Perform these operations at a young age, and when done humanely, cause a minimum of discomfort to the young animal. Consult a local veterinarian for advice and training in these procedures.
3. Uniformity of size and type pays dividends when selling the calves. For example, keeping all Hereford-Charolais calves that weigh 450–500 lb in one group, and Angus-Simmental calves that weigh 500–550 lb in another, results in higher prices than if all of the calves are sold as one lot. Similarly, sell steers (castrated males) and heifers in separate lots.
4. Plan marketing strategies early, and mix the sale groups several days ahead of the sale. Pre-mixed calves are more content with their peers and are quieter for the buyers.

The cow-calf producer's returns tend to be cyclical, driven by supply and demand. These cycles are influenced by the price of finished cattle, prices of other meats, price and supply of feed grains, and production in other parts of the world. Consumer trends also have a bearing on the wholesale or farm-gate price.

The need to keep costs low, and the ability of beef animals to convert cheap, roughage feeds into muscle, means cow-calf enterprises are normally found where grass grows abundantly, land costs are low and higher-priced crops such as corn and soybeans are not practical. Cow-calf enterprises can often be made to work in areas where topography, stoniness, poor drainage or cool growing-season temperatures limit more intensive crop production.

Because returns per calf are not normally high, large numbers of cows are necessary for a cow-calf enterprise to be a viable full-time business. Smaller numbers can be easily adapted to a part-time venture for new, beginning or part-time farmers. One herd sire can breed 25 to 40 cows or twice that number if cows are grouped into "spring" and "fall" calving groups – this is considered an effective unit size. Multiples of these units make up an economical enterprise or business. For natural breeding, managers of larger herds should consider a second (or more) herd sire. With smaller numbers, consider using artificial insemination (AI) on the herd, but it requires a large time commitment during breeding season. Consult a local veterinarian or AI breeding technician to discuss the various considerations around the use of AI including herd management.

Cow-calf performance targets:

- 90% calf crop (i.e. wean at least 9 calves from every 10 cows)
- 95% unassisted calving
- weaning weight of 550 lb or more for steers at 200 days of age
- weaning weight of 500 lb or more for heifers at 200 days of age
- cows producing a calf each year within 365 days (calving interval)
- cows first calving as 2 year olds and remaining productive in the herd until 8–10+ years of age

### **Feedlot**

A feedlot operator buys calves or yearlings weighing 500–1,000 lb. These cattle are fed until they reach market weights of 1,200–1,400 lb. This operation is sometimes broken into two parts, with one farmer growing the cattle on hay or grass for about half of the total gain (an intermediate stage known as backgrounding), and selling to a finisher for the final stage.

With current low margins in the beef industry, it may be difficult to justify this extra enterprise. Some farmers use creep feeding to prepare calves to go onto a full feeding regimen and put calves directly into the feedlot at weaning time. However, the ration transition needs to be gradual.



Successful feedlot management requires knowledge of the cattle markets and the ability to purchase replacement cattle in competition with experienced buyers. The art of knowing when and where to sell finished animals comes with experience.

Narrow profit margins leave little room for poor management. Profits quickly disappear with high death losses, veterinarian and medication costs, and poor growth rates. Buying healthy growing calves, giving them lots of room and ventilation, and avoiding high-energy rations helps avoid health problems. An OMAFRA livestock advisor and a reputable feed company service representative can provide advice.

Feedlot performance targets:

- average daily gain of 2.5 lb per day or more (depending on cost and level of grain feeding, health and growth potential of cattle)
- death losses less than 1% if replacement cattle weigh 600 lb or more
- death losses under 2% if replacement cattle weigh 300–500 lb

### **Birth-to-Market**

In market livestock, producing gain at a cost that is lower than the market price results in profit. Some cow herd owners have learned to capture extra profits by growing their own calves to market weight. This is feasible where a cow-calf farmer has some high-energy grains, such as corn or barley, to form the basis of a finishing ration.

This practice lends itself very well to adding value through direct consumer sales, if the owner can develop a market and is close to a major urban centre.

### **Goats**

Goats are raised to produce meat, milk or fibre. Each type has its own set of management requirements and physical needs to meet if a successful business enterprise is to be established. They are excellent grazers, and are raised primarily on pasture during the growing season, and in open confinement during the winter. Forages, especially hay, form the main part of their diet. This is supplemented with vitamins and minerals at all stages, and with grain according to their energy needs at any particular time.

Female goats are does, breeding males are bucks and young goats of both genders are known as kids.

### **Dairy Goats**

Goat milk, like cow's milk, is regulated in Ontario under the *Milk Act* – and must be produced in facilities that are sanitary and approved by milk inspectors. Milk is tested for bacteria and other factors, and can be rejected if quality is below standard.

There are a few licensed buyers of goat milk in Ontario. Some of this milk finds its way into the fresh market and is available in grocery stores. Some goat milk goes to hospitals because of its digestibility and hypoallergenic qualities. The balance is processed into cheese, yogurt and ice cream.

Saanen, Toggenburg, Alpine and Nubian are the main dairy breeds. Each has its own milk and butterfat production characteristics, and breeders use the different breeds to produce the milk composition they want to send to the dairy. An average dairy goat herd produces about 650 litres of milk per doe per year, containing about 3.2% butterfat. More progressive managers strive for 800 litres of milk testing 3.5% butterfat. This can be achieved by breeding, feeding and managing for higher production, and by careful selection of replacement does.





Dairy goats are fed and managed similar to dairy cows, despite the great differences in body size, milk production and physiology. Feed industry representatives and OMAFRA livestock specialists can help farmers understand the science and art of feeding and management.

Goats are seasonal breeders, expressing heat periods between August and November. However, breeding at this time reduces milk production and produces the greatest milk flow during the summer when milk prices are low. Commercial dairy goat breeders use artificial stimuli to breed for fall kidding, to take advantage of the more lucrative winter milk market.

Like dairy cows, does produce colostrum for the first week of lactation. This "first milk" is loaded with vitamin A and antibodies to help the kids get off to a good start. Once the milk returns to normal, the kids are fed a commercial milk replacer for about three months. Good hay, a starter feed and clean water make up the ration for the developing kids. Grain is added to give energy as the growth rate increases.

Dairy goat analysts agree that a sizable herd is necessary to provide a living income for one person. Minimum economic herd size estimates range from about 60–120 does for one operator. Commercial herds are much larger.

Dairy goat performance targets:

- 800 litres of milk per doe
- 3.5% butterfat test
- highest milk production during winter
- kids weigh 17 kg (30 lb) at 6 weeks of age
- kids weaned off milk replacer at 3 months

### **Meat Goats**

Goat meat is called chevon, and is in high demand during certain religious holidays and festivals. Male kids from dairy goat herds supply most of this meat. These are often purchased as weaned kids by feedlot owners, who market them through the appropriate market outlets. Many meat goats are brought to the Ontario market from Alberta, although there are a growing number of meat goat herds in Ontario. All meat sold in Ontario must be processed in a provincially or federally inspected packing plant. Any meat sold to another province or country must be processed in federally inspected facilities.

The Nubian is the most common breed used for meat production. Strains of this dual-purpose breed have been selected for their meat type, more than for dairy production. The Boer goat, from South Africa, is rapidly gaining in popularity. It has been selected specifically for meat production and for nursing its young. It has been used for crossbreeding as a terminal or meat sire on Nubian and other dairy does, although planned crossbreeding is not in general use yet. Boer goats are in strong demand by the larger packers.

The most important economic factors for goats are the same as with other livestock species. Having a high percentage of kids born and survive to market gives the greatest return, followed by a fast growth rate and ability to meet the more lucrative markets. Nubians and Boers exhibit less seasonality than most other species, and breed over a longer season. Using additional technology to extend the breeding season allows the owner to take greater advantage of off-season markets.





Meat goat performance targets:

- 180% kid crop (of does exposed to bucks)
- kid death loss less than 10%
- does death loss less than 2%
- wean 95% of all kids born
- cull rate of 15% of does each year

### **Angora Goats**

The wool of angora goats is called mohair. It is dyed and spun into specialty yarns for knitting into very fine sweaters, scarves, hats and other garments. This industry is comprised mainly of hobbyists, many who dye, spin and knit their own products.

Angora goats can make an interesting part-time enterprise for the new or hobby farmer.

### **Horses**

An excellent supply of general information on management of recreational horses is available from many sources including your local library, tack shop, feed store, etc.

As with any farming enterprise involving animals, horse farmers must decide whether to grow their own feed, have it custom grown, or rent the land to a tenant to farm. This decision is an economic one, based on the cost of providing feed to the horses. If only a few horses are kept, it may be more feasible to purchase the hay than own expensive harvesting machinery. Purchasing hay also gives horse owners more flexibility in years when the weather makes it difficult to make good hay. At these times, an owner may be able to purchase hay from other areas.

### **Boarding Stables**

Owners of small farms often consider boarding horses or operating a riding school to earn income. This can be a legitimate rural business if the owner has the facilities, the means and the skills to run such an enterprise. This business involves having many people on the property who are not employees, with access to the animals. Consider these factors before starting this type of enterprise.

Ask yourself:

- Why do I want to board horses? Do I have a realistic financial goal?
- Do I have sufficient knowledge of horses to deal with a crisis (e.g. sickness or injury)? Am I prepared to deal with an unruly animal?
- How do my facilities rank against others in the area? Will I have to complete major renovations to be competitive?
- Is there a demand for new boarding services in the area? Has there been much turnover in local boarding services? If so, why?
- Boarding horses is very much a service industry – how are my public relations skills? Am I prepared to deal with boarders' demands and with the loss of privacy? How will I deal with a difficult boarder?
- Do I plan on offering lessons? Will I be giving the lessons or do I need to hire an instructor? What qualifications will I require in an instructor? Will I provide the horses, or will the students supply their own? What additional liability coverage do I need if offering lessons?



- Have I completed a realistic budget of my costs (including feed and bedding, liability insurance, renovations and upgrades, wages, veterinary and medical, farrier, etc.) and compared it to my income projections (board, lessons, possible extra fees, show winnings, etc.)?
- What do others charge for boarding and lessons? Should I charge the same, more or less?

### **Breeding**

Breeding horses is a fairly specialized business. Quality breeding stock is expensive, and the clientele varied, depending on the type and quality of horses being bred. Successful breeders know the industry they are breeding for, and the customers they can attract.

If you are a prospective breeder, ask yourself:

- What do I realistically expect to achieve from breeding horses?
- What type of horse do I wish to breed (e.g. conformation horses, performance horses, standardbreds, quarters, paints)? Can I compete successfully in this business?
- Do I have the quality of stock that is in demand in this market?
- Do I have the knowledge to deal with mares and foals?
- If considering standing a stallion: Do I have the knowledge and quality? Do I have the facilities to house mares to be bred, possibly with foals at side? What will I charge for stud fees and mare care? How will I promote my stallion?
- How old will the progeny be when I sell them? Is there a market for this type of horse? Is the market local? Am I prepared to dedicate the time and effort required to promote the progeny?
- Will I have a difficult time parting with the foals at selling time?

Commercial horse farms experience a high rate of failure. Careful planning before entering the industry helps ensure financial success of the business.

Boarding horses and providing riding lessons may not be considered farming under the *Income Tax Act* and under the Farm Property Tax Rate. However, the breeding, raising and maintaining of horses (and racehorses) may be considered farming. Check with a tax professional familiar with the industry as part of developing your business plan.

### **Pork**

The three stages of modern pork production are farrowing, nursery and grow-finish. These stages may be done by one, two or three producers, depending on the types of resources available to each and the degree of specialization desired. The success of any swine operation hinges on the health of the animals. Developing and maintaining a strict biosecurity protocol is of primary importance for any size herd.

### **Pork Breeds**

The Duroc breed is the most common terminal sire used in Ontario. They are bred for meat production and carcass quality, but are not known for their reproductive and mothering qualities. Consider growth rate, feed conversion and backfat, along with sound feet and legs, when selecting a herd sire.



The Yorkshire and Landrace are white breeds that have been selected for their ability to conceive and raise large litters. These characteristics are increased when the two breeds are crossed to produce a commercial F1 gilt. The F1 gilts are used in commercial swine production and crossed to a terminal sire. Consider growth rate, backfat and reproductive characteristics when selecting gilts for the breeding herd.

Heritage breeds (Berkshire, Large Black and Tamworth) are not typically used in commercial production. They tend to be higher in backfat and lower in productivity and more suited to niche market opportunities.

### **The Farrowing Enterprise**

Productivity is the greatest single factor in profitability for the farrowing enterprise. The farrowing enterprise consists of the following activities – breeding, gestation and farrowing.

#### **Breeding**

Breeding can be done using a boar (natural) or via artificial insemination (AI). The vast majority of producers in Ontario use AI. To bring gilts or sows into heat (estrus), exposure to a boar is required. Gilts are typically bred at 180 days of age or on their second heat cycle. Sows are re-bred between five to seven days post weaning. The natural heat cycle of sows is 18–21 days and repeats until the sow conceives. Plan to introduce 30% to 35% of the herd as new gilts each year.

#### **Gestation**

Once a gilt or sow is bred they enter their gestation period which lasts three months, three weeks and three days (112–117 days). During this time, they may be housed in up to three different systems – individually, in pens or in group housing.

#### **Farrowing**

A week prior to farrowing, sows are moved to the farrowing area. During this stage, sows are housed individually in pens. A farrowing pen provides a safe environment for the sow, the baby pigs and farm workers. One of the main causes of pre-weaning death losses in baby pigs is crushing by their mother. To reduce this loss, specially designed farrowing pens are widely available. Litter size varies depending on a number of factors, and is typically between 9–14 pigs born alive. The first 24 hours post farrowing is a critical period. Additional heat from heat lamps or heat pads is placed in the pen to provide a safe, warm, clean and dry environment for the baby pigs. Baby pigs must be observed suckling on the sow during this period. The sow provides all the nutrition for the litter in the first 7–10 days. After this period, producers need to provide supplemental water and specialized creep feed. Baby pigs are usually weaned at 3–5 weeks of age, depending on weight and body condition.



## Nutrition

Feeding to control the condition of the sows is critical. Most gestation sows need 1.8–2.5 kg of feed per day of a balanced ration, from weaning until the last six weeks of gestation. Add an additional 450–500 g per day during the last six weeks of gestation to ensure healthy growth of the litter. During lactation a good milking sow will eat an average of 5–10 kg of feed per day. As with all livestock, uninterrupted access to clean, fresh water is absolutely essential. For planning purposes, allow about 1.05 metric tonnes of feed per year for each sow. Feeds are specifically formulated for each stage of production, so a feed consultant or swine nutritionist should be consulted.

Keep a recordkeeping system suitable to the size of operation and production goals. Some basic information required in all systems includes – sow identification, breeding date, farrowing date, number of piglets born alive, pre-weaning mortality, weaning age, numbers and weights. The recordkeeping system also helps manage overall herd health including vaccinations, medications and tracking of disease challenges. Develop a herd health schedule with a swine veterinarian.

Swine farrowing performance targets:

- 2.25 litters per year
- less than 10% pre-weaning mortality
- at least 20 pigs weaned per sow per year
- 3 week weaning weight average of 6.0 kg
- sow replacement rate of 30% to 35%
- sow mortality <5%

## Nursery Enterprise

Wean pigs into warm, dry, draft-free and suitably ventilated area with an air temperature of 28°C to 30°C. Ensure daily temperature variation is no greater than one Celsius degree. This temperature can be reduced by about one degree per week until normal room temperature of about 20°C is attained. In facilities where temperature is more difficult to maintain, use hovers or heat lamps to create a micro climate.

Provide all pigs with enough space to meet the minimum standards outlined in the *Recommended Code of Practice for the Care and Handling of Farm Animals: Pigs*. Adjust waterers, feeders and temperature to match the size of pig. Check pigs a minimum of twice per day, paying special attention to look for sick pigs, non-functioning waterers and feeders, and air quality.

In the nursery, pigs are typically fed a creep feed when initially placed. They are introduced to a starter feed around 10–12 kg body weight and then a grower feed at about 18–20 kg body weight. Feeds are specifically formulated for each stage of production, so a feed consultant or swine nutritionist should be consulted. Pigs are moved from the nursery at 25–30 kg body weight or about 5–7 weeks post placement.

Swine nursery performance targets:

- less than 2% post-weaning mortality
- less than 2% post-weaning culls
- 28 kg at 10 weeks of age



### Grow-Finish Enterprise

Pigs are typically placed at 25–30 kg body weight into a warm, dry, draft-free and suitably ventilated area with an air temperature of 22°C to 24°C. Ensure daily temperature variation is no greater than one Celsius degree. This temperature can be reduced by about one degree per week until normal room temperature of about 16°C is attained.

Provide all pigs with enough space to meet the minimum standards outlined in the *Recommended Code of Practice for the Care and Handling of Farm Animals: Pigs*. Adjust waterers, feeders and temperature to match the size of pig. Check pigs a minimum of twice per day, paying special attention to look for sick pigs, non-functioning waterers and feeders, and air quality.

For health reasons, source feeder pigs from a single operation or similar health status. An all-in, all-out management system is recommended, allowing the manager to sanitize the facilities and break any disease cycle between batches. Once pigs are placed within a group they develop a social structure. Avoid mixing pigs or introducing new pigs into an established group.

Feeder pigs reach market weight between 10–17 weeks post placement depending on the target weight. A feeder pig placed at about 28 kg consumes 240–260 kg of feed before reaching market weight. In Ontario, an on-farm mixed diet consisting of corn, soybean meal and premix is the most common type of feed given to grow-finish pigs. Typically, producers feed two or more phases to closely match the nutrition provided to the pig's requirements and optimize returns. Feeds are specifically formulated for each stage of production, so a feed consultant or swine nutritionist should be consulted.

Currently producers may market their hogs through several channels. The method of marketed must be determined well in advance. Using a weigh scale to verify live weight is strongly recommended to maximize returns. All hogs must be properly identified when shipped, with a tattoo registered to the premise they came from. All producers must be registered with Ontario Pork and submit fees.

Hogs are sold on a dressed weight basis and graded according to lean yield and weight. Each box on a grading grid provides an index value, indicating the market value of each carcass. A producer may receive from 0% to 117% of the average market price for the week, according to the carcass value of the hog. Ontario pigs average around 109 index points.

The pork market is quite volatile and cyclical, so attention to market conditions and trends is useful. The necessity of good records – both production and financial – cannot be overemphasized.

Grow-finish pig performance targets:

- less than 2% mortality
- less than 2% culls
- pigs reach market weight by 150–170 days of age from birth
- average grade index 108 or better
- less than 250 kg feed per pig to market weight post placement





## Poultry Production

In Ontario, laying hens, chickens, broiler breeders and turkeys are all supply-managed commodities if they are produced in large enough quantities (see small flock poultry production section for details). This means that quota – the right to market product from these commodities – must be purchased prior to starting this enterprise. The purpose of supply management is to provide stability to a highly volatile market. There is legislation that allows Canadian farmers, in conjunction with provincial and federal governments, to regulate these orderly marketing systems. This system ensures planned production that matches demand, minimum pricing for the farmer and import control through tariffs.

With restricted entry, and the high cost of quota, commercial poultry production is an extremely expensive industry for the newcomer to enter. There are approximately 1,700 farmers that own quota for these commodities. The sale of these birds is regulated through the various marketing boards.

The Ontario poultry industry also includes flocks of waterfowl, game bird, ratite and pigeon. This section of the industry is small in comparison to other poultry production.

### Small Flock Poultry Production

#### Laying Hens

The typical commercial egg producer owns approximately 20,000 birds, although some operations may exceed 100,000 laying hens. Farmers who want to own birds without quota are limited to 99 laying hens per premise.

Hens begin producing eggs at about 19–20 weeks of age and continue to lay for about 12 months. At this point, they go into a molt, and then continue to lay after that. Laying hens need about 16 hours of bright light per day for maximum egg production. This is usually provided by fluorescent lighting on automatic timers and dimmers. The average hen in Canada in a commercial lay barn lays about 324 eggs per year. Unless the hens are inseminated, their eggs are unfertilized and incapable of producing chicks.

All eggs sold, except at the farm gate, must be graded at a Canadian Food Inspection Agency (CFIA) regulated grading station. Only grade A eggs may be sold for table use, and cracked eggs go to the breakers for further processing and pasteurization because of the risk of bacterial infection. Some hen breeds, such as the Rhode Island Red or Barred Rock, lay brown eggs. Other hens such as the White Leghorn and the commercial egg-laying hybrids lay white eggs. There is no difference in nutritional value or flavour between brown and white eggs, but in some markets, brown eggs command a premium. The lower price of the white egg is more than offset to the commercial producer by the much higher rate of production and lower feed consumption of the white egg-laying strains. In recent years, the popularity of Omega-3 and leutine-enriched eggs, as well as free-run and organic, has given the consumer a wider range of choice.

#### Meat Birds

Meat birds are classified into various weight categories depending on the species. Chickens have the following weight categories – Cornish hens (1.2–1.6 kg), broilers (1.6–2.4 kg) and roasters (2.4–3.7 kg). Weight categories for turkeys are – broiler turkeys (up to 6.2 kg), heavy hen turkeys (6.2–10.8 kg) and tom turkeys (10.8 kg and up).



If you want to raise broiler chickens without quota, you are allowed 300 broiler chickens per person and premise per year. That means two or more people cannot grow their 300 birds on the same premise in the same year. When selling chicken for meat, it must be inspected at a licensed slaughter facility. It is stated in the Small Flock and Farm Gate Marketing, Chicken Farmers of Ontario Regulation No. 2228-2008 that “Every exempt grower is solely responsible for all compliance with all other federal, provincial, territorial, regional, municipal or other governmental boards or agency requirements including but not limited to, environmental and food safety regulations pertaining to the production or marketing of chicken and any requirement of a local health authority with regard to the storage, handling and sale of chicken.” Section 18 states that “Persons duly appointed by the Board may (a) inspect the books, records, documents, lands and premises and any chickens of persons engaged in producing or marketing chickens; and (b) enter on lands or premises used for the producing of chickens and perform a count of chickens.”

There are many regulations that govern the production and sale of chicken products. Full details on the regulations can be found on the Chicken Farmers of Ontario website. Section 11c states “All chicken shall be marketed at the premises and to purchasers who attend at the premises and purchase the chicken for their personal consumption.” The producer must also register as a small flock grower, prior to receipt of the chicks. This process can be completed online, or through the assistance of the broker dealer where the chicks were purchased.

With turkeys, the commodity board exempts from regulation the production and marketing of not more than 50 turkeys from individual non-quota holding premises during each calendar year. Farmers are not required to register with the turkey board. But dealers, hatcheries and custom kill plants must report the number of birds sold or processed, civic (911) addresses, townships and counties to the Turkey Farmers of Ontario office.

Once these limitations are surpassed, you are required to purchase quota for these supply-managed commodities. The various poultry marketing boards that fall under supply management have the authority under the *Farm Products Marketing Agencies Act* to enforce their regulations and control supply. There is a minimum buy-in for each commodity, and the representative board inspects and approves the growing facilities. Unlike the dairy industry, poultry quota is not sold through an organized quota exchange. Further information about these regulations is available by contacting the various boards – Turkey Farmers of Ontario, Egg Farmers of Ontario and Chicken Farmers of Ontario.

Waterfowl production consists of ducks and geese, mostly raised for meat. The duck breeds raised most often in Ontario are the Muscovy and the Peking. They reach market weight at 5–6 weeks of age and they are 2.7–3.2 kg approximately. The Chinese goose is the most common farm breed. Broiler type geese can go to market at 8–9 weeks of age at a body weight of 4.0 kg and heavy type geese can go to market at 12–14 weeks of age at a body weight of 6.0 kg. Both ducks and geese can be raised in buildings similar to chicken or turkey production with power ventilation and lighting controlled by timers. Seasonal production of duck and geese may occur in outdoor pens.



### Raising Birds

Laying hen pullets are purchased as day-old chicks from a commercial hatchery, or at 19 weeks as ready-to-lay pullets. Meat birds are purchased as day-olds. Day-old chicks need a temperature of about 32°C at the level of their backs for the first week. The temperature is then dropped by 2° to 3° per week until a temperature of about 21°C is reached. Broiler chicks are ready for market at 6 weeks of age, roasters at 9 weeks.

The chicks are fed a complete ration with clean, fresh water available at all times. Day-old chicks need room temperature water to avoid being chilled. Both layers and meat birds can be fed a complete ration in the form of mash, crumble or pellets. This feed is prepared by highly competitive feed companies who employ qualified nutritionists and use very sophisticated mixing and pelleting equipment. Small operators that want to make their feed from concentrate must follow mixing instructions closely. If you add extra grains to the feed, the balance of the nutrients in the feed is diluted, and can lead to production issues, metabolic challenges, thin shelled eggs, etc.

Poultry are very susceptible to a number of diseases. To help prevent disease, use fresh, clean litter, isolate poultry flocks from other birds and do not mix birds of different ages in the same pen. Ensure that drinking water is fresh and uncontaminated at all times. Manage ventilation carefully, and check the flock several times daily for sick or dead birds.

Further information on small flock production, management, disease control and biosecurity is available on the OMAFRA website. Information about marketing and production of poultry and eggs can be found on the websites listed under Poultry in the References and Resources section.

### Large Flock Poultry Production

The broiler chicken is in the barn 5–8 weeks to reach a liveweight of 1.7–3.8 kg. The meat turkey is in the barn 80–123 days to reach a liveweight of 5.25–15 kg. The chicken layer lays eggs starting about 19 weeks of age and continues for 52 weeks to produce about 325 eggs. The broiler breeder lays fertile eggs for about 40 weeks, laying about 150 eggs in her life, producing about 108 saleable chicks.

Housing for these birds is in buildings where the ventilation and lighting are controlled. Building costs can be quite high for these structures and they can be single or multiple story. The amount of computerization and automation in these buildings is quite high. Ventilation based on zones, static pressure, temperature, carbon dioxide and humidity are quite common. Automated egg collection and egg packing is also often used. This level of automation allows a relatively low number of people to effectively manage very large flocks. In battery cage lay systems, belts often are used to remove manure, also assisting with air quality.

Manure and deadstock management of these larger operations is subject to *Nutrient Management Act* regulations to ensure the safe and effective use of manure and on-farm disposal of dead birds. Information about this act and others is available on the OMAFRA website.

Feed for large operations is most often a complete feed ration tailored to the end use of the bird – whether it is meat, table eggs or fertilized eggs going to a hatchery. Large feed storage bins are used to accommodate bulk feed that is blown in from the feed truck.



The cost of getting into the supply managed commodities can be quite high. The cost of the quota and the barns can easily run into the millions of dollars. Large scale production of non-supply managed poultry commodities have a lower cost of entry, but the marketing of these species is often left up to the producer. Not all of these commodities have marketing boards to assist with market development either. There is the option for some of these species to utilize old poultry barns that once had quota.

Further information about quota cost and supply management regulations is available from the various boards – Turkey Farmers of Ontario, Egg Farmers of Ontario and Chicken Farmers of Ontario.

### **Sheep**

Commercial sheep production is similar in many ways to beef cow-calf production, except everything is scaled down, and it is possible for some breeds to have more than one lamb crop per year. Of course, the physiology and nature of the sheep is different from cattle, and these factors cause some significant differences in the way sheep are managed.

In the most common type of sheep enterprise, the producer keeps a flock of ewes and raises lambs primarily for meat production. Unlike cow-calf producers, most sheep producers finish their own lambs to market weight and condition. For this reason, there are very few lamb feedlot enterprises in the province.

For the diverse Ontario market, lambs are sold over a wide weight range, from 60–110 lb live weight. Some consumers prefer smaller lambs for the Easter season and are willing to pay a premium for these lambs. To meet this market need, producers breed lambs to be born in early January. This market is limited, however, so a large flush of lamb on the market at this time may actually depress the base prices.

Sheep, like cattle, are ruminants and use forages and rough land to their advantage. But sheep require very good fencing. They are relatively small animals, and can squeeze through fairly small holes. Once on the outside, the defenseless sheep or lamb is vulnerable to attacks by dogs or coyotes. Many shepherds have turned to high-tensile electric fences to keep the sheep in, and the predators out.

Loss of sheep to predators, such as the eastern coyote, (and black bear in some areas) has been an increasing problem in most areas of Ontario. Packs of domestic dogs that have gone wild are also a threat in southern Ontario. Predators are often so troublesome that they are cited as a main reason for producers exiting the industry.

Producers must be vigilant and have an integrated control strategy for their farms, including high-tensile electric fence or small mesh net fence. Livestock-guarding animals such as donkeys are sometimes used, making a lot of noise if predators are near, thus warning the sheep and shepherd. Coyote traps have been used with some success. Shooting predators is an option open to livestock farmers if the problem persists. However, if the predators are neighbourhood dogs, this practice can lead to disputes, lawsuits and very bad community relations. Gun owners may also be liable for any property or personal damage.

The Ontario Sheep Marketing Agency (OSMA) has a predator control officer who advises shepherds on methods of controlling these predators, and conducts information programs across the province. OSMA is the only provincial sheep association active in Ontario. It conducts marketing, educational and promotional activities on behalf of Ontario producers.



New producers should gain as much experience and knowledge as possible before acquiring sheep. Many local sheep organizations host introductory level education programs, and offer networking opportunities with experienced shepherds. New producers usually find it helpful to gain experience with a small flock, under the watchful eye of an experienced mentor. This applies to all farming businesses, but sheep are, perhaps, less forgiving of human error than other livestock. The old adage that “a sick sheep is a dead sheep” may not be quite accurate, but shepherds must be quick to recognize and treat sick animals.

Health status is paramount when purchasing stock. To minimize future health problems and lost productivity, purchase from as few flocks as possible. If expansion requires more purchases of ewes, return to the original supplier if the first ewes purchased proved to be healthy and productive.

### Sheep Breeds

As in beef cattle, the advantage of crossbreeding over pure breeds is too great to be ignored. More prolific reproduction, better milk production, faster growth rate and better meat quality are among the many benefits to crossbreeding, and these are the highest profit-producing characteristics.

Normally, a maternal cross is formed, using breeds that are known to be good mothers. These maternal traits are listed in the table below. Selected high-performing lambs from this cross may be bred back to a ram or sire of one of the parent breeds, or another maternal breed, to produce replacement dams (ewes) for future generations.

The terminal cross sire is selected from a breed known to produce fast growth and good meat quality. These lambs are used only for market purpose and are never used or sold as breeding stock.

**Table 10. Important Traits for Maternal and Terminal Sheep Breeds**

Maternal Traits	Terminal Sire Traits
Fertility	Rapid post-weaning
Prolificacy	Growth rate
Lamb survival	<b>Carcass traits</b> Light, uniform fat covering Large loin eye area High dressing percentage
Mothering ability	
Milk production	
Pre-weaning lamb growth	
	<b>Wool traits</b> Short, dense fleece

In selecting breeding stock, shepherds look for on-farm record information that indicates these traits are present in, or can be transmitted by, the animals being considered. If a shepherd plans to raise their own replacement lambs, it is important to keep these records for selection purposes, and to identify the lambs with tattoos and/or ear tags.





**Table 11. Breeds of Sheep and their Use in Ontario Production Systems**

Maternal Breeds		Terminal Breeds
Yearly Lambing	Accelerated Lambing	
North Country Cheviot	Dorset (polled)	Suffolk
Border Leicester	Rideau Arcott	Charolais
Romney	Romanov crosses	Canadian Arcott
Dorset	Outaouais Arcott	Texel
Crosses of these breeds		Hampshire
		Oxford
		Shropshire
		Southdown

Small numbers of other breeds are also available in Ontario. These might be kept pure for showing or novelty use, such as Jacob sheep, or as a niche market breed such as Southdown or Barbados.

Some breeds are adaptable to breeding more often. The use of these breeds and modern hormone technology in an accelerated lambing program is practised by more progressive commercial shepherds. Under this system, one-third of the flock lambs every 4 months, so that every ewe has 3 lambings in 2 years. This approach means the shepherd can market lambs at the right size all year.

Accelerated lambing requires accelerated management, and is rarely a good choice for a new or part-time shepherd.

Winter lambing is not recommended for commercial lamb production except when it is part of an accelerated lambing system or to access the Easter market. Winter lambing typically results in higher than normal mortality, and eliminates grass as an option for producing low-cost gains. Lambs and milking ewes need grains and more supplements during the winter months.

Lambs have their tails “docked” (cut short), and male meat lambs are “wethered” (castrated) as young as possible. The younger the age, the less stress and setback the lambs suffer. Consult an experienced shepherd or veterinarian for advice on the best techniques.

### **Nutrition**

Feed requirements (quantity and quality) are greatly influenced by production system, body size, stage of production, prolificacy and rate of growth or stage of development. As a general guide, a 70 kg (150 lb) ewe requires about 2.2 kg (5 lb) of hay per day, plus up to 0.7 kg (1.5 lb) of grain per day during late gestation (last 6 weeks) and early lactation. Total feed required over and above pasture is at least 431 kg (950 lb) of hay and 61 kg (135 lb) of grain per year. Winter lambing and accelerated lambing flocks have higher nutritional requirements than spring lambing flocks, and make maximum use of pasture.

Carrying capacity of pastures varies considerably. Intensively managed pastures on excellent soil and rainfall conditions can carry up to 24–25 ewes and lambs per hectare (10 ewes and their lambs per acre) for the season. Until new producers acquire adequate knowledge and management skills, plan on no more than 4–5 ewes per hectare (2–3 ewes per acre).

Sheep performance targets:

- 24–25 ewes and lambs per hectare (10 ewes and lambs per acre)
- ewe death rate of less than 3%
- 1.8 lambs marketed per ewe per year
- lamb survival greater than 95%

### **Dairy Sheep**

A small, growing farm enterprise is milking sheep. Noted for a higher percentage of solids, sheep milk is predominately processed into cheese. The increased popularity of sheep cheese means more people are interested in milking sheep. Similar to other dairy animals, the management, nutrition and ventilation of dairy sheep is very important. Agri-business and OMAFRA livestock specialists have more information about dairy sheep farming.

### **Wool Production**

All sheep must be shorn in the late winter or early spring, to relieve heat stress and reduce invasion by parasites. Wool is usually sold to the Canadian Cooperative Wool Growers (CCWG), and in turn, is sold to the textile industry. The quality of wool produced by most Ontario breeds does not command a market premium, and most shepherds find the sale of wool barely covers the cost of shearing.

There are a number of custom shearers who travel across the province shearing sheep. These are well known by local shepherds, by the CCWG and OSMA.

### **Specialty Wool Breeds**

Leicester and Rambouillet sheep produce long strands of wool with a fibre quality of special interest to knitters and spinners. Merino sheep produce a very fine wool used in the textile industry for high-quality garments. These wools are strictly niche products, and specific markets must be created and maintained. Some small producers create lucrative hobbies out of dying, spinning and knitting these wools.

### **Veal Production**

To produce veal, newborn calves (usually bulls of dairy breeding) are fed a ration designed to finish animals at a light weight, providing lean, tender meat. Calves are raised as either grain-fed or milk-fed veal. To be eligible for sale as veal, veal carcasses must weigh no more than 180 kg (396 lb).

Milk-fed veal calves are fed milk replacer and special veal feeds with no roughages to ensure the meat is very pale in colour. They are typically marketed at a live weight of 220–250 kg (485–551 lb).

Grain-fed veal is the more commonly raised type of veal in Ontario. After weaning, calves are fed a ration of grain and protein to produce a rapid growth rate. Small amounts of hay or other roughage feed is fed to maintain the digestive system. These calves are fed to reach a finished live weight of 275–330 kg (606–728 lb).

Profitability depends on the cost of purchasing calves and feed, reasonable gains, low mortality, and the market price of calves and finished animals. Finished calves are often sold to processors directly, or through auction sales facilities.



Alternatively, the veal enterprise works well with direct sales to neighbours, friends and co-workers. Working closely with a local abattoir, the veal producer takes orders for halves, quarters or cuts – cut and wrapped to the buyers' specifications and usually fast-frozen. Selling cuts of meat may leave producers with a lot of low-demand cuts to dispose of. Grinding cheaper cuts and pressing into burgers is one way to add value and sell this lower-priced meat.

All meat sold in Ontario must be processed in a provincially or federally inspected packing plant. Any meat sold to another province or country must be processed in federally inspected facilities.

A recommended code of practice detailing the proper care and management of veal calves is available from the Ontario Veal Association.

### **Alternative Farming Enterprises**

New or part-time farmers often look for opportunities that can be done on a small land base, on a part-time basis or with high income potential. Non-traditional crop or animal species often lend themselves to one or more of these categories.

Existing farmers often look to alternative (non-traditional) crops or livestock to:

- diversify their existing business and income base
- satisfy a market niche
- create employment opportunities for other family members
- make use of unused or underutilized facilities, buildings or land

An alternative or non-traditional enterprise is described as any venture that is unusual or not normally carried out in an area. Cranberries, for example, would be an alternative crop for eastern Ontario where production is very small, but not in Muskoka, where there are two thriving cranberry farms. Bison could be an alternative to cattle anywhere in Ontario because the population of farmed bison is very low in the province.

Alternative operations are unique because they are unusual, and there is little or no marketing pattern or infrastructure established. Producers generally must find and develop the market for the product. How well they accomplish this is at least as important as how well they produce the product. Marketing and production are separate parts of the same business for alternative enterprises, and development of the total business must be taken into account in the planning phase.

Value-added opportunities also exist as alternatives. For example, a market gardener may add a farm store to the business and bypass the wholesale market with all or part of the produce. A simple act of cleaning, sorting and packing produce for an existing market is a value-adding activity if it means a higher price is paid for the produce. A fruit grower may make jams, pies or juices for a specialty market or a pork producer may offer specialty pork cuts directly to the consumer.

Whatever the alternative enterprise, the market is limited, and the entrepreneur needs to learn new marketing skills to be successful.



Before investing in any alternative enterprise, ask yourself:

- What are your products? What services or special features are included with them (packaging, delivery, etc.)? What made you decide on these products?
- What do you know about the market? Is there a demonstrated market demand? Is there room for expansion of this marketplace? Who are your target customers? How much volume are they likely to buy in an average year? What price are they willing to pay (lowest, highest and average)? What factors influence price? Are they currently buying similar products? Where, how much and from whom?
- Who are the competitors that supply these or similar products in the same marketplace? What products and services do they provide? At what price? Can you provide the products and services competitively with current suppliers? What do you have to offer your customers that present suppliers do not? How will your competitors likely react to your entry into the marketplace?
- How will you market the products? Is there an existing marketing infrastructure? What methods of distribution work best (distributors, retailers, direct sales, cash and carry)? What will you do to attract customers? What promotional methods will you use to reach your target audience? What factors will make them come back again? Do you have the resources (personal, financial, time, etc.) to access that market?
- What methods of pricing best suit this product? Is it a "lowest price" competitive product, or a "premium quality" product? Is the packaging and promotion consistent with the quality and image of the product?
- Are there any regulations or licenses governing the production, handling and marketing of the products?
- Where can you find out more about growing, raising, processing, sorting, packaging, transporting, handling and marketing the product(s)?
- What are your anticipated costs of production? Do the potential returns justify the investment and risk required?



**Table 12. Alternative Livestock and Crops**

Alternative Livestock Enterprises	Alternative Crops
Fish farming (aquaculture)	Herbs (culinary, medicinal and aromatic)
Bison (buffalo)	Hops
Deer and elk	Sweet potatoes
Wild boar	Tree nuts (e.g. hazelnut, heartnut, sweet chestnut, black or persian walnut, etc.)
Milking sheep	Ethnic vegetables
Llamas and alpacas	Specialty berries (e.g. cranberries, haskap, wolfberry, sea buckthorn, wild blueberries, etc.)
Fur farm species (mink, fox and chinchillas)	Edamame
Rabbits	Industrial crops (e.g. hemp, energy grasses, chicory, russian dandelion, etc.)
Game and specialty birds (pheasants, partridge, quail and squab)	Specialty mushrooms

**Table 13. Other Alternative Enterprises**

Value-Added Alternatives	Other Alternative Enterprises
Other value-added consumer products (pies, jam, jelly, preserves, etc.)	Bed-and-breakfast
Fruit and vegetable products	Agritourism and farm vacations
Herb products	Private campground
Direct sales enterprises (roadside stands, pick-your-own, farmers' markets, etc.)	On-farm bakery or meat store
	Farm repair shop or metal working
	Furniture making or wood working

**Deer and Elk**

Deer and elk have been raised on Ontario farms since the mid 1980s. Statistics Canada reports that in 2006 Ontario had 158 deer farms, 8,031 deer and an average herd size of 51 deer per farm. The corresponding numbers for the elk sector were 80 farms, 3,550 elk and an average of 44 elk per farm. The average number of deer and elk processed in Ontario provincially licensed abattoirs between 2006 and 2010 was 1,380/year, but the number has been declining each year. The majority of the deer and elk farms are operated on a part-time basis.

Deer and elk are members of the deer family and are commonly referred to as cervids. Cervids are ruminants, like cattle and sheep that have cloven hoofs and four-chambered stomachs, but are distinguished from other ruminants by their bony antlers. Only male cervids have antlers which grow and are shed or harvested annually. The antler can be sold as soft antler (more commonly known as velvet antler) or as hard antler. The main cervid species currently raised in Ontario and their products are:

- elk – meat and antler
- elk/red deer hybrids – meat and antler
- red deer – meat and antler
- white-tailed deer – meat but primarily as trophy animals that are sold into other jurisdictions that allow hunting preserves
- fallow deer – meat

If you are interested in starting a deer or elk farm, start by checking with your municipality to ensure local zoning bylaws allow cervid farming. Deer and elk farms are not licensed, but they are regulated by the Ministry of Natural Resources (MNR) under the *Fish and Wildlife Conservation Act (FWCA)*. The FWCA does not allow hunting in captivity, and farmers are responsible for ensuring farmed cervids do not escape. If an escape occurs, the farmer is responsible for reporting the escape to MNR and recovering the escaped animals. A person transporting live white-tailed deer, elk, moose, woodland caribou and their hybrids into Ontario, requires a permit under the FWCA. This applies to transporting these species for any purpose, including deer and elk farming and zoos. A "Cervid Movement Permit" must be issued by the Canadian Food Inspection Agency (CFIA) before animals are moved. CFIA will only issue a permit if a veterinary inspector is satisfied that movement of the animal would not, or would not likely, result in the spread of TB or brucellosis.

To safely prevent the escape of farmed cervids and the entry of predators, a high perimeter fence is needed. Fences must suit the size and temperament of the specific species being





farmed but generally fences are 1.9–2.4 m (6.2–8 ft) high. Due to the height of deer fences, installation involves more labour and cost than regular farm fencing. Fencing is a major investment. When planning the fencing, remember that although these are farmed animals, cervids are not domesticated and handling can be a challenge. Cervid farms require specialized handling facilities for safer and easier handling, and to allow for sorting, tagging, doing inventories, vaccinating, deworming and shipping, and for treating them in the event of sickness or injury. The farm layout must address how the animals are moved from paddock to paddock, from paddock to handling facilities (and vice versa) and how they are loaded/unloaded. Visit existing cervid farms before planning your farm layout.

Most cervid farms incorporate cow-calf, growing and finishing enterprises into one operation where the breeding stock are bred and calve, and calves/fawns are grown to marketing age. There is some variation between species, but generally breeding season (the rut) runs from September to November and calving season extends from May to June. Elk, red deer and fallow deer generally have single calves/fawns, while twins are normal for white-tailed deer.

Cervids are ruminants so the majority of their ration is made up of roughages either in the form of pasture or forages (hay, haylage, silage, etc.). There are two general approaches to finishing animals for market – grass fed or grass and grain fed.

The age cervids are marketed varies widely with the market. If marketed for meat, most cervids are marketed between 18–24 months of age. The following are average live weights for cervids processed in Ontario in recent years based on a 56% dressing percentage.

**Table 14. Dressed Carcass Weights**

Animal Age	Dressed Carcass Weights		
	Female White-Tailed Deer	Red Deer	Elk
1.5 year old (mostly females)	68 kg (150 lb) – all female	130 kg (285 lb)	195 kg (430 lb)
Mature female	68 kg (150 lb)	164 kg (360 lb)	264 kg (580 lb)
Mature males			351 kg (770 lb)

The major challenge for the Ontario deer and elk farming sector is the lack of marketing infrastructure. There are plenty of provincially licensed abattoirs to process the animals, but very few actually market the meat. That means cervid farmers must plan to market their own products.

### **Bison (Buffalo)**

The North American bison is often referred to as buffalo, but the two are completely different animals. Bison and buffalo both belong to the Bovidae family, but have different origins and are separate species. Bison are native to North America while true buffalo are native to Africa and Asia.

Bison, like cervids, have been raised on Ontario farms since the mid 1980s. Statistics Canada reports that in 2006 Ontario had 71 bison farms, 4,106 bison and an average herd size of 58 bison per farm. The average number of bison processed in provincially licensed abattoirs in Ontario between 2005 and 2009 was 450 bison per year. Like deer and elk farmers, bison producers tend to be part time.



If land is zoned agricultural, bison are generally allowed, but check with the local municipality to ensure zoning bylaws permit bison farming. There is no license required to farm bison.

Bison are in the same family as cattle, sheep and goats. Raising bison is similar (but not identical) to raising beef cattle, so it is not surprising that most bison production systems are adapted from the beef sector. Bison are bigger, stronger and more excitable than cattle, and require special fencing and handling facilities. Although semi-domesticated, bison are still considered wild by nature and special care is required during handling and other interactions with the animals. Take extra caution with cows that have young calves and with bulls during breeding season. Bison fencing can range from good cattle fencing to much more substantial fencing. Perimeter fencing should be 1.5–1.8 m (5–6 ft) high. Since bison tend to be excited in close quarters, fences around handling areas must be taller and stronger than those around pastures. The best way to keep bison on the right side of the fence is to ensure they always have free access to adequate feed and water.

Mature bulls weigh 910 kg (2,000 lb), and cows weigh 455–590 kg (1,000–1,300 lb). Bison are seasonal breeders and only cycle once each year. The main breeding season is during August and September. A breeding ratio of 10 cows to 1 bull is sufficient for new producers. Heifers are generally bred at 2 years of age and after a gestation period of 280–285 days calve April through June. At birth, calves weigh 16–23 kg (35–50 lb) and if weaned at 6 months of age weigh 160–193 kg (350–425 lb). Bison are slower growing than cattle and bulls are ideally marketed at 18–24 months of age at live weights of 430–567 (950–1,250 lb), yielding carcasses in the range of 260–330 kg (570–725 lb).

In terms of marketing, bison are more similar to cervids than to cattle. Despite adequate provincial slaughter capacity for bison, there remains a void in market infrastructure. Many producers must take on the responsibility of marketing their own meat.

### **Rabbits**

Rabbits have been raised for meat in Ontario for a long time. Aspects of the meat rabbit sector that makes it attractive to prospective rabbit farmers are:

- rabbits are small and easy to handle and transport
- relatively inexpensive to purchase cages and nest boxes, and to modify existing buildings
- negligible land base is required
- existing marketing infrastructure is in place
- can be done part time and complements off-farm employment and other types of agriculture

Here are some basic rabbit terms and background information:

- rabbitry – a rabbit farm or rabbit raising enterprise
- doe – a mature breeding female
- buck – a mature breeding male
- kit – a young rabbit from birth to weaning
- fryer – a young rabbit from weaning to market that will be marketed for meat at 9–12 weeks of age



- kindle – the act of giving birth to rabbits
- litter – the number of kits born to a doe at one time
- doe to buck ratio – the number of does kept for each buck. Generally the ratio is 10 does/buck (or 0.1 bucks/doe) for new producers.

Potential rabbit producers must be aware there is a high turnover rate among new entrants. Increase your chances of success by ensuring adequate ventilation and lighting to maximize reproductive success and minimize health issues. Consider buying new cages and nest boxes to minimize potential introduction of diseases from the previous owner. If buying used cages and nest boxes, clean and disinfect before use.

Statistics Canada reports that in 2006 Ontario had 881 rabbit operations, 75,680 rabbits and an average farm size of 86 rabbits per farm. The size of a rabbit farm is most often given in terms of the number of does rather than the number of total rabbits. At any point in time, each doe has an average of about 17.1 rabbits in the rabbitry associated with her – that's 1 doe + 0.1 bucks + 16 kits (1 litter of 8 kits which she is nursing and a second litter of eight fryers which she has weaned). Using these assumptions, and based upon the 2006 Statistics Canada figures, there would be 881 rabbit operations, 4,425 does and an average farm size of 5 does per farm. This reinforces the fact that most rabbit owners have small operations and are part time, but the Ontario commercial meat rabbit sector has many farms ranging from 25 to more than 1,000 does. Many of the 881 operations are likely non-commercial operations which include pet owners, show rabbit operations and rabbitries producing fibre. This section focuses on the Ontario meat rabbit sector.

Ontario processed about 186,000 rabbits per year in provincially licensed abattoirs between 2005 and 2009, not including rabbits processed in federally inspected plants in Ontario. Some rabbit industry personnel suggest Ontario processes a total of 400,000–500,000 rabbits per year between federally and provincially inspected plants.

There is no license required to raise rabbits. Prospective producers should contact their municipality to ensure rabbits can be kept in accordance with local zoning bylaws. New producers are encouraged to visit existing farms to learn from experienced producers about how to set up a rabbitry. If visiting rabbitries, take proper biosecurity measures to minimize the spread of disease.

The most popular meat rabbit breeds kept in Ontario are New Zealand and Californian which breed at 6–7 months of age. The various breed back schedules used by the rabbit industry can be puzzling to new comers. Table 15 was produced from OMAFRA's Rabbit Budget and Cost of Production Calculator, available through OMAFRA or Ontario Rabbit. The table summarizes some possible breed back schedules, potential performance targets and implications on production parameters. Obviously, the shorter the breed back schedule the more fryers/doe/year are marketed, but intensive breeding systems mean does are replaced more often. New producers should consider a less intensive breeding interval (i.e. 21–28 days) until they gain experience and can then determine the breed back schedule best suited to their operation and circumstances.



**Table 15. Rabbit Breed Back Schedule**

Production Variable	Breed Back Schedule						
	Post Kindling	7 day	14 day	21 day	28 day	35 day	42 day
Gestation period (days)	31	31	31	31	31	31	31
Breed back schedule (days)	1	7	14	21	28	35	42
Total production cycle (days)	32	38	45	52	59	66	73
Maximum number of litters/year (assuming 100% conception)	11.4	9.6	8.1	7.0	6.2	5.5	5.0
Maximum number of litters/year (assuming 80% conception)	9.1	7.7	6.5	5.6	4.9	4.4	4.0
Average number kits born/litter	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Average death loss (%)	15%	15%	15%	15%	15%	15%	15%
Average number kits marketed/litter	6.7	6.7	6.7	6.7	6.7	6.7	6.7
Average number fryers marketed/doe/year	62	52	44	38	33	29	27
Average fryer market weight kg (lb)	2.5 kg (5.5 lb)	2.5 (5.5)	2.5 (5.5)	2.5 (5.5)	2.5 (5.5)	2.5 (5.5)	2.5 (5.5)
Days to market	70-77	70-77	70-77	70-77	70-77	70-77	70-77

Virtually all rabbitries feed commercial pelleted rations to meet the rabbit's nutritional requirements. Although rabbits have different nutritional needs at various stages of production (i.e. growth, maintenance, gestation, lactation), most small rabbitries use only one feed for the entire rabbitry in order to keep the feed fresh.

Rabbits require daily access to fresh, clean water. Manual watering systems can be adequate but require daily labour to fill and maintain the water cups. Automatic watering systems provide continuous water supply with minimal labour, and minimizes waste and water contamination. Check nipples regularly to make sure they are working.

There are well established and traditional markets for rabbit meat in Ontario, but investigate current markets and market conditions before starting a rabbitry. As with other agricultural commodities, prices can be cyclical and are dependent on supply and demand. A number of provincially licensed processing plants buy, process and distribute rabbit to grocery stores, delis and restaurants. Most of the plants specializing in rabbits also have depot systems in place to assist with the transportation of live rabbits from the local depots to the processing plant, which is particularly useful to smaller producers in minimizing transportation costs. Before raising rabbits, make sure there is a market for the product.

### **Fish Farming (Aquaculture)**

Fish farming, or aquaculture, is the propagation, cultivation or rearing of aquatic organisms. Aquaculture is practiced worldwide and involves the farming of many different species of finfish, crustaceans, molluscs and aquatic plants. From the year 2000 to 2008, world aquaculture production grew from 41 to 68 million tonnes. In 2005, more than half of the global seafood supply was provided by aquaculture. The availability of high quality protein sources in light of declining wild fish stocks, continued population growth and increased public awareness, is essential. Aquaculture is ideally suited to solve this need while maintaining social, economic and environmental responsibility.

In Ontario in 2009, more than 4,500 tonnes of rainbow trout were produced from 280 licensed facilities. Most facilities are in southern and central Ontario, but the majority of production comes from northern Ontario, particularly in the waters of Georgian Bay and Manitoulin Island.

Rainbow trout currently accounts for more than 95% of the production output from Ontario aquaculture, and is the result of well established culture techniques, availability of domesticated stocks, good quality commercial feeds and a recognized demand for the species. The *Fish and Wildlife Conservation Act* permits the culture of 38 different aquatic species, including most endemic game fish, crayfish, baitfish and tilapia. In addition to trout, there is also small-scale culture of perch, walleye, sturgeon, arctic charr, tilapia and several species of baitfish in Ontario.

Private sector fish culture in Ontario was allowed in 1962 and initially involved the production of rainbow trout in ponds. These ponds were often specifically designed for fish production with steep sloping sides and a rectangular shape to facilitate stock management and harvesting. This type of extensive culture is characterized by low stocking densities and high labour costs with resulting high variable costs of production. The low capital costs normally associated with pond culture makes this a favourable production system for the hobby farmer.

Since the mid 1970s, the industry has steadily evolved with the construction of highly intensive facilities using long rectangular concrete raceways or circular tanks. These land-based systems are designed for high fish stocking densities, maximal water usage, and require good animal husbandry practices. Improved feed conversions and labour efficiency usually result in lower production costs.

Cage aquaculture is a specialized production system that produces most of the salmonids (trout, salmon) around the world. In these systems, fish are raised from fingerling to market size in cages moored in open water. In Ontario, most of the cage culture operations are in the Georgian Bay area, primarily centered in the North Channel area near Manitoulin Island. Currently, cage culture accounts for 80% of fish production in Ontario.

Though commercial aquaculture might appear to be quite different from other livestock industries in the province, the same factors governing the success of any agribusiness apply to aquaculture. Proper business planning, market research, efficient rearing systems, and good animal husbandry and management skills are necessary for profitability. Fish farming is capital intensive and has a moderate level of risk, especially to the novice producer. Many factors need to be considered in starting a commercial aquaculture business including sources of financing, water supplies, site selection requirements, rearing system design, legislation, financial planning and marketing.





Aquaculture is unlike most other forms of animal livestock production because of the use of common water resources and the production of both native and exotic species. Legislation is in place to conserve and manage water resources for all users, and protect habitat and natural fish populations.

The Ontario Ministry of Natural Resources administers the Aquaculture License under the *Fish and Wildlife Conservation Act*, which stipulates which species may be raised at a particular location. The Ontario Ministry of the Environment administers the *Ontario Water Resources Act (OWRA)* which requires all water users in the province who use more than 50,000 litres of water a day to obtain a Permit to Take Water. The OWRA also regulates the discharge of wastewater to the natural environment from any facility including fish farms. This usually requires some form of waste treatment system for solids settling and removal.

Most Ontario trout are sold to processors, fish markets or directly to grocery stores and restaurants throughout the province. Ontario trout is typically sold live, fresh, whole, smoked or filleted. Live fish and fingerlings are sold to owners of recreational ponds, to fee fishing preserves and to the cage growout farms in northern Ontario. The majority of the rainbow trout sold to processors is in the 1.2 kg range for the production of pin-bone removed fillets.

The Northern Ontario Aquaculture Association represents and promotes the industry at the federal and provincial levels, and encourages the sustainable growth of fish farming in the province. The Ontario Ministry of Agriculture, Food and Rural Affairs provides both research and extension support to the industry, primarily at the University of Guelph. Research focuses on new species culture, reproductive technologies, disease management, least-cost diet formulations, genetics and growth enhancement. Extension activities are geared towards assisting novices entering the business, as well as providing technical and diagnostic services to existing commercial fish farms.

For more detailed information on aquaculture in Ontario and for information on the next full day seminar 'Getting Started in Aquaculture' at the Alma Aquaculture Research Station, check out the website for aquaculture in Ontario at [www.aps.uoguelph.ca/~aquacentre/](http://www.aps.uoguelph.ca/~aquacentre/)

### **Food Safety and Traceability**

To keep Ontario food safe, we must all take steps to produce, process, handle and store food in a way that prevents or reduces any danger to human health. These risks include microbial, physical and chemical hazards, and can arise at any stage of food production and handling.

In the event of a disease outbreak or product recall, an effective traceability system is vital and ensures you have timely and accurate information to minimize the impact on food safety and to your business.

Mistakes and missteps not only damage a farm or processors' reputation, they can cost lives. That's why everyone in the agri-food chain – from those who grow and process food to those who sell it – must participate in ensuring the safety of our food.

### **Food Safety**

Food safety is everyone's responsibility. It begins on the farm and continues to the time a food product is consumed. It is in the best interest of every farmer to ensure the food products that leave the farm do not make anyone sick from eating or handling them. This can be accomplished by adopting food safety practices outlined in an on-farm food safety program (OFFSP).



### **What is an OFFSP?**

The saying goes – say what you do, do what you say and have the records to prove it. In simple terms, an OFFSP is a set of good agricultural practices (GAPs) which address food safety risks caused by biological agents (bacteria, viruses, etc.), chemical contamination (pesticide, animal health products, etc.) and physical hazards (broken needles in meat). A food safety program outlines practices that reduce or eliminate these risks. A specific set of records is required, filled out and signed by producers, to ensure the practices have been followed.

Following food safety practices puts your credibility to the test. It involves checking that you have food safety practices in place and met all the requirements of the food safety program you are following. This check is called an audit. There are three ways this can be done – by yourself, called a first party audit; by whoever buys your product, called a second party audit; or by an independent, authorized, party, called a third party audit. The type of audit you use depends on the requirements of the marketplace where you sell your product. Most major supermarkets requiring an audit ask for a third party audit. Auditing is done at the expense of the producer.

At the present time, participation in an on-farm food safety program is voluntary. The market where the product is sold determines the need for a program and the type of program used. If product is marketed through quota allotment with one of Ontario's marketing boards (milk or poultry), the marketing agreement requires the producer to maintain certified status to continue marketing. If fresh horticulture products are sold to the major retail stores in Ontario, the producer is asked to carry out a third party audit of the operation using one of the national programs.

As more consumers and markets are requiring proof the food produced is safe, adopting an OFFSP puts your operation in a preferred seller position. An increasing number of buyers are demanding their suppliers follow a food safety program. Following and documenting GAPs on your operation is a positive step towards due diligence. It is an assurance to wholesale buyers and farm market consumers that you are taking food safety seriously and have implemented practices with their safety in mind. As a new farmer, plan for adoption of some level of food safety as the operation develops.

### **Food Safety Programs**

Food safety programs are built according to a strict system of recognizing and resolving risks called HACCP (Hazard Analysis Critical Control Point). Good Agricultural Practices (GAP) are developed based on HACCP principles and they are specifically adapted to apply to risks found on farms. HACCP-based programs are developed for specific commodities. Outcome-based programs also address food safety risks and are general good agricultural practices that can be applied to general farm use. Outcome-based programs also follow HACCP principles.

In Canada, a series of national programs have been developed and approved under the guidance of the Canadian On-Farm Food Safety Program (COFFS) and in cooperation with the Canadian Food Inspection Agency (CFIA). All major livestock and horticulture commodities have a program in place. These programs are directed at single commodities or groups of commodities and provide recommendations for audits. In Ontario, these programs can be accessed through the various commodity associations.



OMAFRA has developed Advantage – Good Agricultural Practices (AdvantageGAP) as an outcome-based program covering all commodities on a farm. AdvantageGAP addresses risks associated with livestock and crop production, and the special risks associated with cross-contamination on mixed-commodity farms. It offers producers the convenience of a single set of records. The program manual contains a review of national and Ontario regulations that apply to food safety on the farm, factsheets related to on-farm food safety and templates for writing farm practices and keeping records.

OMAFRA has developed a full set of supporting products and services to assist producers in getting started on a food safety program. These are available in both hard copy and electronic formats. The electronic version of the AdvantageGAP program, called iGAP, includes the 3-2-1 Assessment tool allowing producers to answer simple questions to determine what food safety risks are unique to their farm. iGAP contains videos and other helpful aids to help the producer understand good agricultural practices. The self-assessment checklist is a printed summary of the practices in AdvantageGAP and can be used as a report card to see if you are implementing all the practices that apply to you. OMAFRA also offers specific food safety training and support tools for farmers with employees. Training aids can be ordered from OMAFRA in several languages and are specifically aimed at hygiene on the farm. See the resource section for the ministry's contact information.

### **Traceability**

#### ***What Is Traceability as it Applies to Farming?***

Traceability is the process of tracking an identified product (and its attributes) as it moves between locations. It is ability to trace and follow food, feed, food-producing animals or substances through all stages of production and distribution.

In the event of a disease outbreak in livestock or poultry, a traceability system must be in place to track animal/poultry movement to contain the disease. In the case of food-borne illness from contaminated product, a traceability system allows for rapid recall to identify the source of the contamination and remove product contaminated from the marketing channels to reduce further sickness. An accurate and timely recall can also save a business from financial collapse.

#### **Traceability System**

There are three components that make up an effective traceability system:

1. premises identification – knowing the location of operations that supply or ship products
2. product/animal identification – referred to as the lot, batch or tag number
3. movement recording

A good traceability system captures and organizes this information for easy tracking, and relies on written and/or computer records, instead of someone's memory. Tools can include:

- accurate, up-to-date handwritten documents
- electronic spreadsheets and databases
- software designed to manage traceability information along with other aspects of a business
- specialized hardware to support the collection of data such as tag readers or bar code scanners



Traceability works on the concept of being able to track one level back and one level forward in the food supply chain. For a farmer this means:

- products need to be tracked from where they came from before arriving at the farm
- products/livestock that leave the farm need to be tracked to the next level in the food supply chain

For example, input supplies purchased and coming onto the farm must have the supplier, product name, lot number, quantity and date of arrival recorded when received. For products sold off the farm (i.e. strawberries to a wholesale distributor), the distributor name, date shipped, lot number and quantity need to be recorded. The lot number must appear on the strawberry packaging to link that product to production information such as date of harvest. This also allows the farmer to identify other information for that particular product – the field the berries were harvested from and what chemicals if any were applied. Once the farmer ships the product off the farm, it then becomes the responsibility of the buyer to track one level back and forward, by recording the movement of the product received by the farmer to the next point of sale, which could be to further processing or individual retail stores.

Traceability is currently voluntary for all producers in Ontario. However, there are mandatory national identification programs in Canada for beef, dairy, bison and sheep with other species moving to the same position in the near future. These programs stipulate that the animal must be tagged (i.e. ear tag) with an approved tag before leaving their farm of origin. Cattle and bison producers have the option of recording birthdates of their animals in a national database. Verified age at slaughter is a determining factor for export qualification of meat products to certain countries like Japan.

### **Setting Up a Traceability System**

The cornerstone of a traceability system is Premises Identification (ID). A Premises ID is a unique identifying number given to a parcel of land associated with agri-food activities. In Ontario, premises are identified and registered in the Ontario Agri-Food Premises Registry (OAPR) and given a Premises Identification Number. The purpose of the OAPR is to be able to locate where agricultural and agri-food activities occur in Ontario.

Premises Identification numbers differ from business registration numbers (e.g. Farm Business Registration, license or other business identifiers) as each one is linked to a specific parcel of land, not to a business. If land is sold or the agri-food activity on an identified premises changes, the information in the OAPR needs to be updated but the Premises ID number associated with that parcel of land remains the same. Call OMAFRA's Agricultural Information Contact Centre at 1-877-424-1300 for more information on how to register your premises with the OAPR.



Once you have a Premises ID, you can begin to assess your operational needs for a traceability system. A traceability system is not necessarily something you purchase, install and implement all at once. You can start with writing receiving and shipping procedures, then purchase a new piece of equipment such as a labeler and go from there. Determine what is feasible for your operation:

- What equipment do you need/want to purchase or install and how much will it cost?
- Will any structural modifications be needed to existing production areas to accommodate equipment?
- Can additional components be purchased or installed at a later date?
- Are there yearly fees to consider (e.g. internet, software support, equipment maintenance)?
- What are the benefits to adopting traceability?

In addition to responding quickly in an emergency (such as food-borne illness or animal disease outbreaks) by tracking all products shipped to and from your farm, traceability also provides business benefits. Decreased labour costs through more efficient recordkeeping, improved efficiencies in production, improved inventory control and decreased costs through less waste and over-stocking, and verification of product attributes are some of the benefits.

As a new farmer, plan for a traceability system that is practical, flexible and reliable for the business in the long term, as your new farming operation develops.

### Marketing Farm Products

Marketing is a process of preparing goods or services to be sold to the public for their greatest value. This process is guided by the four Ps – Product, Promotion, Price and Place. Applying these four principles determines how successful entrepreneurs will be in getting the best value for their products.

**Product** – How well the product is prepared, and whether it is wanted or needed by the customers, is the most basic step in marketing. Understanding the marketplace and determining the need for a product is the subject of many books and home study courses. New entrepreneurs are advised to study and understand consumer demand before deciding to launch a new product.

**Promotion** – Promotion is the method of letting customers know about the product, and presenting it in a way to encourage them to buy it and come back for more. Advertising is part of promotion, but packaging, store or stand display and customer service have an equally important role in marketing.

**Price** – More businesses are likely to fail because of poor pricing policies than for any other reason. The goal of pricing is to get maximum return from the product, and means pricing it for the most profitable combination of price per unit and number of units sold. Maximizing or minimizing either price or volume may not result in maximum profits.

Price is not related to cost of production. Knowing the cost of production is important to know the break-even point for your products. But the price is determined by what the competition is charging for equivalent products, and what consumers will pay for the product. Price must cover the cost of production and any other costs, and provide a profit.





**Place** – Location, location, location are said to be the three most important principles in selling. The selling location or place can determine how many customers and which customers see and buy the product. A fresh produce stand located on the way home from work likely sells more produce than one located on a side road. But location alone does not get customers' attention. Having a hook to get them in the door – and a product, quality and price to bring them back – are the keys to making the location work.

There are many marketing principles, such as targeting, positioning, market orientation, segmentation and so on, that are embodied within the four Ps. Entrepreneurs interested in developing their marketing skills can access many books and study courses on the subject.

### **Selling What You Grow or Raise**

Farm products can be classified into four types – commodities, produce, niche and value-added products.

**Commodities** are crops and livestock that are produced in relatively large quantities for general consumption and sold through common marketing channels. These commodities may be traded on commodity exchanges, such as the Chicago Mercantile Exchange, and are priced based on large volume demand in domestic and export markets. Grains, oilseeds, hogs and market cattle fall into this category. In addition, products that are in general use by the public and sold from the farm to high volume processors may also be classed as commodities. Milk, processing vegetables and fruit are in this category.

**Produce** may be grown for local or export markets or processors. It may be sold directly to consumers, wholesaled to the retail trade or distributors, or marketed through produce markets such as the Ontario Food Terminal in Toronto. Garden vegetables and fruit, culinary herbs, and even some meats, fall into this category.

**Niche products** are usually grown for small speciality markets, and sold directly to consumers, restaurants, distributors or specialty processors. Niche marketing is producing a unique product (or service) with a unique characteristic or service advantage to the buyer or consumer that they will pay a premium for. Oriental vegetables and medicinal herbs fall into this category. There are very few defined markets for these products, so the grower must develop these market niches.

**Value-added** builds on the primary product or service of an agricultural business by adding a new component with economic value and consumer appeal. For example, a fruit farm that sells to a retailer may add value by expanding into pick-your-own, direct sales to consumers at their farm or local market, and/or the sale of jams and jellies made onsite.

When considering a value-added product or service, and before investing any money in capital, labour, services or supplies, it is a good idea to research the new business venture.

The divisions between these four categories are not clearly defined, and a product may move between categories depending on how it is prepared and marketed. If a farmer had pork custom processed and retailed the cuts, the pork moves from a commodity to a specialty product. If the farmer sells cucumbers at a farm market or to a store, they are produce. If the farmer processes the cucumbers into pickles they might be classified as a specialty. These are not legal descriptions or definitions, but merely an attempt to show the many ways to market farm products.



### Market Research

Surveys, personal interviews, focus groups, literature reviews or test marketing activities may constitute market research. These tools help entrepreneurs find the information they need to decide if a product commands a higher price, and whether to proceed with the proposed venture. Be sure the market research reflect the needs and desires of the most likely buying group. The selection of the method and location of the survey activities is crucial to getting reliable information.

### Direct Marketing

Direct marketing allows the farmer to market all or part of their produce directly to the end user, often increasing market share. Direct marketing allows the producer to build a direct selling relationship with the buyer, and provide unique and targeted products and services. Some common ways of direct marketing are roadside stands or on-farm stores, pick-your-own enterprises, farmers' markets, community supported agriculture, through the internet or other social media, and urban stores or direct ordering by consumers. Some people add value to their produce by cleaning, sorting and displaying it in special ways, or even processing it and selling a new product.

If the right marketing skills are used, direct marketing can be a very lucrative way to sell produce. Fruit and vegetables, meats, honey, maple products, home baking, jams and many other home-grown consumer products are often sold in these ways.

### Marketing Boards

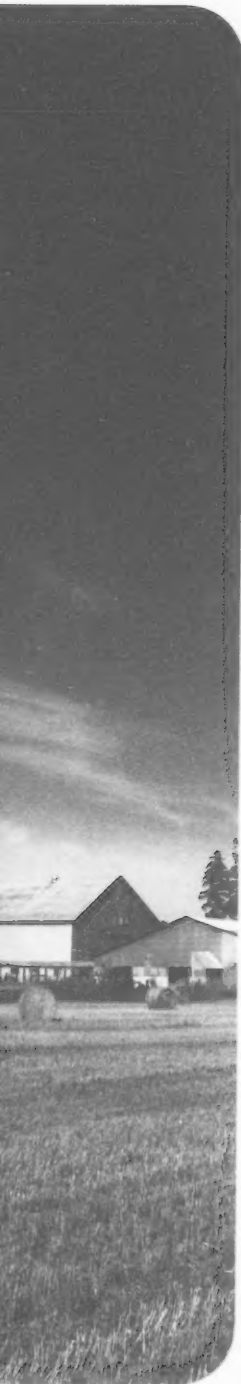
Some agricultural commodities are governed by marketing boards. Approximately two-thirds of Ontario's gross farm cash receipts are from commodities with a marketing board. These organizations have been established by a majority vote of producers for the purpose of marketing their products more effectively. They are established under the authority of the *Ontario Farm Products Marketing Act*.

The Ontario Farm Products Marketing Commission (OFPMC) is an agency of the Province of Ontario accountable for the conduct and oversight of the marketing boards. It has the authority and power to administer the provisions of the *Farm Products Marketing Act* and the *Milk Act* and to authorize, amend or revoke the powers of marketing boards. The OFPMC reports directly to the Minister of Agriculture, Food and Rural Affairs.

Marketing boards play an important co-ordination role in the marketing or selling of commodities. The nature of that role is determined by each board's marketing plan. These plans vary in the degree the board influences how producers sell their commodities and how companies that purchase agricultural commodities (i.e. food processors, dealers) source and purchase their requirements.

Marketing boards are categorized by specific marketing functions and powers.

- Negotiating boards are authorized to negotiate terms and conditions of sale.
- Boards with the Authority to Establish Price analyze supply and demand forces to determine a fair and equitable price for the commodity they represent.
- Supply management boards allot quota, granting individual producers the right to produce and market given quantities of product.



Marketing boards also play an important role in research, promotion and education of consumers. The high cost of these activities is more easily covered by a small contribution from each producer through fees paid to individual boards to cover operating and program costs.

If a product is covered under the mandate of a supply management marketing board, it may be illegal for a producer to sell any, or more than a few, of these products directly to end users, depending on the type of board and the regulations it governs. For example, a farmer may keep up to 99 laying hens without owning quota and sell eggs from those hens to consumers at the farm gate. For more detailed information on the production and marketing of milk, turkey, eggs, chicken or broiler hatching eggs and chicks, contact the relevant marketing board. Contact information for the marketing boards is found on the OMAFRA website. Under non-supply-management boards, such as pork, fruit and vegetables, grains and oilseeds, direct sales to processors or consumers are permitted.

### **Environmental and Social Considerations**

Long-term farming depends on meeting today's needs without compromising the ability of future generations to meet their own needs. Although the benefits can't generally be measured in terms of dollar value, many farmers also find great satisfaction from getting involved in environmental stewardship, their community and their industry.

#### **Environmental Farm Plans**

Environmental Farm Plans (EFP) are prepared voluntarily by producers. These plans highlight environmental strengths on the farm, identify areas of environmental concern and set realistic goals to improve environmental conditions on the farm according to the owners' timetable. Government incentive programs may be available to complete or implement action plans arising from an EFP. Incentive programs usually require certain criteria to be met in order to receive the incentive. EFP can also help farmers save production costs and prevent environmental liabilities.

#### **Local Food – Foodland Ontario**

Foodland Ontario is a long-established consumer promotion program of the Ontario Ministry of Agriculture, Food and Rural Affairs. From its inception in 1977, Foodland Ontario has partnered with producers to achieve the maximum penetration of the Ontario market by Ontario-produced fresh and processed agricultural products.

One of the main objectives of the program is to maintain consumer intent to purchase Ontario products at more than 80%, and assisting Ontario producers to maximize their market share. Foodland Ontario's marketing efforts are coordinated through multi-media campaigns including transit ads, radio, television and print ads.

To achieve its market objective, Foodland communicates the benefits (economic and product characteristics) of Ontario food, encourages the purchase of Ontario food, co-ordinates promotion and research activities with producer organizations and industry stakeholder, and promotes the Ontario brand. The target group for these strategies are the primary and secondary food purchasers in Ontario.



### **Foodland Ontario Logo**

Foodland Ontario supports and promotes fresh fruits and vegetables, and is working with retail partners to move towards the promotion of other fresh Ontario food categories. These categories include: meats, deli, bakery, dairy and specialty foods.

Fresh Ontario food products can carry the Foodland Ontario logo at no charge. The Foodland Ontario logo is recognized by 96% of principal grocery shoppers in Ontario. To consumers, the Foodland Ontario brand represents fresh, local food and is a call to action. People who are familiar with the logo and Foodland Ontario advertising are significantly more likely to purchase fresh Ontario food. See the resources section to find the link to additional information.

### **Definitions of Ontario Food Products for Government Marketing Purposes**

The definitions used for government marketing purposes are listed below. Commodities or commodity organizations that have not developed commodity specific definitions for government marketing programs will use 100% Ontario definitions (born, raised, slaughtered and processed in Ontario).

#### **Ontario beef**

Ontario beef will be born, raised, slaughtered and further processed in an approved facility in Ontario. When there are not enough calves born in Ontario to meet the demand for beef, calves may be sourced from within Canada. This beef will be raised, slaughtered and further processed in Ontario. This would return more than 80% of the direct costs of production to Ontario's farmers and economy.

Fresh or frozen beef steaks, roasts and other fresh cuts must be from animals less than 30 months of age, these must meet the above criteria and must be graded (Canada Grade or equivalent).

#### **Ontario cheese**

More than 90% of the milk in Ontario cheese is produced on Ontario dairy farms. Up to 10% of the milk used for processing in Ontario can be sourced from within Canada. The curds and whey must be produced in Ontario from Ontario dairy inputs. Any identified secondary ingredients need to be grown and produced in Ontario (e.g. strawberry cream cheese).

#### **Ontario chicken**

Ontario chicken will be hatched from eggs laid in Ontario or from newly hatched chicks which may be sourced from within Canada or the United States. These chickens will then be raised, slaughtered and processed in Ontario.

#### **Ontario dairy products (yogurt, sour cream, etc. – excludes milk and cheese)**

More than 90% of the milk in Ontario dairy products must be produced on Ontario dairy farms. Up to 10% of the milk used for processing in Ontario can be sourced from within Canada. Any identified secondary ingredients need to be grown and produced in Ontario (e.g. peach yogurt).



**Ontario eggs**

Ontario eggs must be laid on egg farms in Ontario.

**Ontario fruit**

Ontario fruit must be grown in Ontario.

**Ontario honey**

100% of the product must be produced, extracted and packaged in Ontario.

**Ontario lamb**

Must be born, raised, slaughtered and processed in Ontario.

**Ontario maple syrup**

100% of the product must be collected, processed and packaged in Ontario.

**Ontario milk**

More than 90% of the milk processed in Ontario is sourced from Ontario dairy farms.  
Up to 10% of the milk used for processing in Ontario can be sourced from within Canada.  
Any identified secondary ingredients need to be grown and produced in Ontario.

**Ontario pork**

Must be born, raised, slaughtered and processed in Ontario.

**Ontario processed food products**

Ontario processed food products must be made in Ontario from a majority of Ontario ingredients. More than 80% of the total direct costs of production must return to Ontario. Primary agricultural ingredients will meet the individual Ontario foods definition.

Example: "Ontario chicken pot pie" – 80% of the total direct costs of production would have to return to Ontario and the chicken in the pie would have to be hatched from eggs laid in Ontario or from newly hatched chicks which may be sourced from within Canada or the United States. These chickens would then be raised, slaughtered and processed in Ontario.

**Ontario soft wheat flour (cake and pastry flour)**

Due to extensive production of soft wheat in the province, 100% of the Ontario soft wheat needs to be grown and milled in Ontario.

**Ontario vegetables**

Ontario vegetables must be grown in Ontario.

**Ecological and Organic Farming**

In addition to the business considerations for deciding how to manage the farm, there are environmental and social values and goals to accommodate into the design of a farm. Discuss these values among all members and/or partners of the farm business.





As noted earlier in this publication, organic farming incorporates a combination of farm practices. Organic farmers are generally certified and able to get premium prices when they market their products. “Ecological” and “natural” are other terms that are used to describe farming systems, but have no standards or definition for what practices are included or excluded, and they are not certified. Ecological and natural usually have minimal if any premiums in the marketplace. Some farmers also produce products by specifying or eliminating certain practices and market them as “antibiotic-free”, “pesticide-free”, “hormone-free”, “grass-fed”, etc. In all cases, these terms have no standards and very little recognition or premiums in the marketplace. When marketing these products, do not misrepresent the product. The federal *Consumer Packaging and Labelling Act* regulates misleading and deceptive labelling. You must be able to prove your claims.

All types of agriculture and farming practices have some impact on the environment of the farm and surrounding area. Some farming practices have greater impact than others, and management is key to minimizing the negative impacts and preventing environmental pollution. The farming practices you chose to use and how you manage them, and the nature of the farm – soil type, slopes, depth to ground water, distance to surface water features, etc. – determine the potential for environmental risks on the farm.

Organic farmers do not use synthetic pesticides and many commercial fertilizers. One of the beneficial practices on organic farms is to use diverse crop rotations and cover crops to increase the organic matter of the soil. Crop rotations help manage nutrients in organic cropping systems, reduce crop pests and help reduce soil erosion. Many organic farmers also set aside ecological areas along field margins or in non-tillable areas of the farm to enhance wildlife biodiversity including beneficial insects.

There are also potential risks to the environment from organic farming practices that must be managed. Tillage is used to control weeds since herbicides cannot be used in organic farms. Excessive tillage increases the risk of soil erosion and wastes energy.

Livestock manures are generally used to replenish nutrients in the soils. Manure must be managed so it does not contaminate water during storage or at application. Manure odours may also need to be managed by tilling the soil immediately after application. Composting manure is a strategy to reduce odours in manure. Manure also contains many human pathogens that must be managed to reduce the risk of contamination of food products being grown. Composting manure reduces these risks. Do not apply manure within 120 days before the harvest of food products.

### **Taxes**

Certain tax regulations are designed specifically for agriculture. Contact your accountant or the relevant tax authority for complete information. Hiring a tax professional with experience in agriculture is a good practice. The federal, provincial and municipal governments administer taxes, and all have some impact on the rural property and rural business.



## **Farm Business Registration Program and Farm Property Class Tax Rate Program**

### **Farm Business Registration Program**

All Ontario farm businesses with a gross farm income of \$7,000 or more must register annually with Agricorp in the Farm Business Registration Program, and pay an annual fee of \$195 to one of the accredited general farm organizations. As noted earlier, there are currently three general farm organizations – the Ontario Federation of Agriculture (OFA), the Christian Farmers Federation of Ontario (CFFO) and National Farmers Union-Ontario (NFU-O). This funding allows these organizations to represent the interests of farmers to the Governments of Ontario and Canada. Having a valid Farm Business Registration number is one of the eligibility requirements to access the Farm Property Class tax rate.

### **Farm Property Class Tax Rate Program**

Farm properties satisfying the eligibility requirements are identified as being eligible for the Farm Property Class tax rate and taxed at 25% of the municipal residential tax rate. The farm residence and 0.4 ha (1 acre) of land surrounding it, continue to be taxed as Residential Class.

To be eligible for the Farm Property Class tax rate, the following criteria must be satisfied:

- property must be assessed as farmland by the Property Assessment Division of the Municipal Property Assessment Corporation
- property must be part of a farming business with gross farm income of \$7,000 or more annually (as reported to Canada Revenue Agency). However, if income is less than \$7,000, the farm business may still be eligible for the tax rate if one of the following income exemptions applies: age/illness/death exception; not a normal production year exemption; and start-up exemption. During the establishment of a farm business, eligibility may be granted on the basis of reasonable projected estimates. This is especially important in the case of perennial crops such as orchards, grapevines, breeding livestock, etc.
- farm businesses operating on the property must have a valid Farm Business Registration number
- a Canadian citizen or a permanent resident of Canada must own the property. For partnerships or corporations, Canadian citizens or permanent residents of Canada must control greater than 50%.

The information collected on the current year's Farm Property Class tax rate application forms is used to determine eligibility for the following taxation year. Owners are responsible for notifying the Ontario Ministry of Agriculture, Food and Rural Affairs of any ownership, contact information or eligibility changes related to the property.

Your local municipality then administers property taxation based on property tax class information provided by the Ontario Ministry of Agriculture, Food and Rural Affairs, and property valuation information provided by the Municipal Property Assessment Corporation.

Before buying a property, confirm the property is assessed as farmland, and that there are no liens or other financial claims against the property.



### **Managed Forest Tax Incentive Program**

The Managed Forest Tax Incentive Program (MFTIP) aims to maintain or enhance healthy forests by providing forest management education to landowners. The MFTIP is delivered by the Ontario Forestry Association (OFA), the Ontario Woodlot Association (OWA) and the Ministry of Natural Resources (MNR).

To be eligible for the MFTIP, forest must cover at least 4 ha (9.88 acres), excluding residences and open areas. Landowners who apply and qualify for the program have their property reassessed and classified as Managed Forest (MF). The MF land is compared to local farmland and has its Estimated Current Value determined based on its potential productivity. The change in Estimated Current Value is shown on the Notice of Property Assessment. The MF land is then taxed at 25% of the municipal residential tax rate.

### **Conservation Land Tax Incentive Program**

The Conservation Land Tax Incentive Program (CLTIP) is designed to recognize, encourage and support the long-term protection of Ontario's significant conservation lands. Landowners taking part in the CLTIP are exempt from property taxes on lands that qualify.

Eligible conservation lands include provincially significant wetlands, provincially significant Areas of Natural and Scientific Interest (ANSI), areas designated as Escarpment Natural Area in the Niagara Escarpment Plan and the habitat of endangered species. The owners of conservation land must agree to maintain their property as conservation land and not carry out any activities that would have a negative impact on the natural heritage values of the site. The land must be at least one-fifth of a hectare (one-half acre) in size.

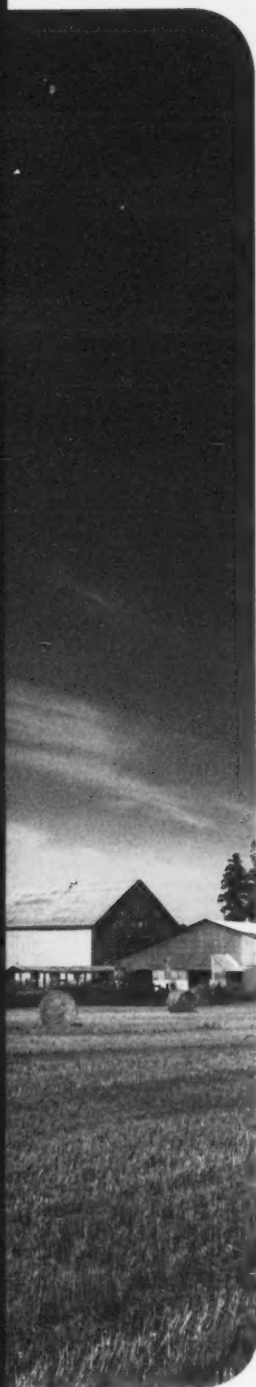
The Ministry of Natural Resources must receive applications for entry in the program. Landowners are mailed a brochure and application if they have eligible land.

### **Income Tax**

Farm businesses may use the cash or accrual method of calculating income. Under the cash method, only the cash received for products sold and cash spent on operating expenses is included in the tax statement. Under the accrual method, changes in the inventory of livestock, feed and supplies, accounts payable and accounts receivable are adjusted at the end of the fiscal year. These changes are reflected in the income statement. Most farmers file taxes based on the cash method.

Purchases of buildings and equipment are not considered operating expenses. Capital Cost Allowance (CCA) may be claimed on buildings and machinery under both the cash basis and accrual method. The rate of CCA is outlined in the Farming Income Guide, available through the Canada Revenue Agency website or office.

In a sole proprietorship, income or losses from farming must be combined with other sources of income to calculate taxable income. When farming is being combined with another source of income, ensure the farm is registered as a business in order to deduct any losses from personal income. Your accountant will help you determine whether a farm loss may be deducted against other income.



### Capital Gains Tax

Capital gain is the increase in value of a capital asset, such as a house or farmland. In Canada, the principal dwelling of every person is exempt from capital gains taxation. Most other capital assets are subject to Capital Gains Tax.

Land and production quotas are the major assets to incur capital gain on a farm. For properties owned before January 1, 1972, the capital gain is the difference between the sale price and the value on January 1, 1972. In addition, some adjustments can be made to either the January 1, 1972 value or the purchase price. For properties purchased after January 1, 1972, the capital gain is the difference between the sale price and the purchase price.

Fifty percent of a capital gain is tax free. The other half is subject to regular tax. This portion, called the taxable capital gain, is added to all other income in the year the gain occurs. Special provisions exist to defer the payment of Capital Gains Tax when a farm is transferred to children. Professional tax advice is highly recommended.

If you have a taxable capital gain resulting from the sale of qualified farm property, you may be able to claim a capital gains deduction. Since 2007, a \$750,000 Capital Gains Exemption is available for dispositions on qualified farm property occurring after March 18, 2010. Contact a professional tax advisor for additional information.

### Harmonized Sales Tax

On July 1, 2010, Ontario moved to a Harmonized Sales Tax (HST) that combined the existing federal Goods and Services Tax (GST) and the Ontario Retail Sales Tax (RST). With the harmonization, most farm inputs continue to be zero rated and can be purchased without paying any tax. Examples include feed, fertilizers, grain bins and dryers, seed, farm equipment and machinery, livestock purchases, pesticides, quota and tractors greater than 60 hp.

Farm inputs that were previously taxed with the Ontario RST are subject to the HST and are also eligible for an offsetting input tax credit. Examples include pick-up trucks used on the farm, computers and office equipment used in the farm's business.

Farm inputs that were previously exempt from the Ontario RST but not the GST, are subject to the HST and are also eligible for an input tax credit. Examples include contract work, freight and trucking, veterinary fees and drugs, custom feeding, machinery lease and rental, hand tools, fuel, oil and grease.

The HST is administered by the Canada Revenue Agency. GST/HST registration is mandatory if you are providing taxable goods or services in Canada and your total (gross) worldwide taxable revenue exceeds \$30,000 over the previous four calendar quarters. Input tax credits can be claimed to recover the GST/HST paid or owed on purchases and expenses used in your commercial farming activities.

You should register for GST/HST before buying your farm property. Registering allows you to claim any rebates owing to you from the purchase of the property. Your new farming business will also be ready to claim any exemptions and rebates from the very start.



When you register for GST/HST with the Canada Revenue Agency, you are assigned a reporting period for filing your GST/HST. When you complete your return, you can claim a refund if the GST/HST paid is greater than GST/HST owed.

The Canada Revenue Agency assigns a Business Number (BN) to all new businesses registering for GST/HST, payroll deductions and corporate income tax.

#### **Land Transfer Tax**

Every individual or corporation obtaining land in Ontario is subject to Land Transfer Tax. The tax is based on the consideration of all lands, buildings, estates, and rights or interests in them, including options and long-term leases.

Several exemptions from the Land Transfer Tax are allowed on the transfer of farmed land to related individuals. To qualify the land must be used predominantly in farming by the individual or the related individuals prior to the transfer. The land must also be farmed by those family members after the transfer. There are circumstances where the exemption will or will not apply because of the specific requirements. Contact a professional financial advisor for additional information.





# Glossary of Common Agricultural Terms

**Accelerated lambing** – a system used by the shepherd to produce three lamb crops in two years.

**Agriculture tourism/agritourism** – defined by the University of California's Small Farm Center as "the act of visiting a working farm or any agricultural, horticultural or agribusiness operation for the purpose of enjoyment, education or personal involvement in the activities of the farm or operation."

**Backgrounding** – feeding beef market animals a low-energy ration for a period of time after weaning to prepare them for feedlot feeding.

**Balanced ration** – a feed or group of feeds that supply all of the required nutrients to an animal in the correct amounts.

**Barrow** – a castrated male pig.

**Boar** – a male pig.

**Bred gilt** – gilt recently bred, awaiting first farrowing.

**Buck** – a male goat, deer or rabbit.

**Cash crop** – a grain, oilseed or forage crop grown and sold directly off the farm, rather than being fed to livestock on the farm where it is grown.

**Cervids** – the deer and elk family.

**Chick** – newly hatched chicken.

**Cockrel** – immature male chicken.

**Companion crop (nurse crop)** – a crop grown in combination with a newly planted forage crop to provide returns from the field in the year of establishment and/or to provide protection for the forage seedlings. Oats are often grown as a companion crop.

**Concentrate feed** – a feed that is low in fibre and high in protein and/or energy. This term is frequently used to describe a "supplement" that is high in protein.

**Colostrum** – the first milk of a mammal after giving birth. It is rich in antibodies and nutrients for the new offspring.

**Creep** – a protected area where young animals are allowed to enter but larger animals are not.

**Creep feeding** – the practice of providing young animals with additional feed while they are still nursing.

**Cropland** – land used to grow crops.

**Cultivating** – working or distributing the soil, usually done ahead of planting a crop.

**Custom work** – farm operations that are hired out, usually tillage and cropping work.

**Custom operator** – a contractor who performs custom work.



**Dehorning** – the process of removing horns from animals.

**Digestible protein** – the protein in a feed that can be utilized by an animal. It is usually expressed as a percentage of total protein.

**Doe** – a female goat, deer or rabbit.

**Dressed weight** – the weight of an animal's carcass after the hide, head, feet and/or organs have been removed.

**Dressing percentage** – the dressed weight of the carcass as a percentage of the weight of the live animal.

**Equity (net assets)** – The value of the assets of a business that remain after the liabilities, or debt, has been subtracted. It is usually expressed as a percentage.

**Estrus or oestrus** – Also known as “heat period.” The time in a female animal's reproductive cycle when she is receptive to the male and may conceive.

**Ewe** – a female sheep.

**Farrowing** – act of sow or gilt giving birth.

**Farm business** – a commercial farm undertaking that is operated for financial gain.

**Farm enterprise** – a unique portion of the farm business, which is expected to be profitable in itself, and to contribute to the success of the total business.

**Feeder cattle** – cattle requiring further feeding for market, sometimes called “stockers.”

**Feedlot** – a fenced yard or open building where cattle or sheep are finished for market.

**Finisher** – Usually pigs from 25–122 kg live weight kept for slaughter; may only refer to pigs from 50–122 kg.

**Forage** – a crop of which the whole plant is used as a feed (e.g. grasses, clovers, corn silage, etc.).

**Frame** – a description of the bone structure of an animal, often used to denote size.

**Free choice** – allowing animals to have constant access to feed, salt and/or water.

**Fryer** – a young rabbit from weaning to market that will be marketed for meat at 9–12 weeks of age.

**Fungicide** – a chemical used to control fungi and bacterial diseases.

**Gelding** – a castrated horse.

**Gestation period** – the length of time between conception and birth.

**Gilt** – female pig from birth to first farrowing.

**Grade (commercial) livestock** – cattle (often crossbred) that have not been registered with the appropriate breed association or registration authority.



**Green manure** – green plant material, usually legumes, that is grown specifically to be ploughed down to provide organic matter and nutrients to the soil.

**Grower** – a pig from 25–50 kg.

**Hazard Analysis Critical Control Point (HACCP)** – a systematic preventive approach to safety that addresses physical, chemical and biological hazards as a means of prevention rather than finished product inspection.

**Heat** – see “Estrus.”

**Heat units** – values based on the relationship between temperature and crop development. This is used in Ontario to measure the suitability of an area for growing a specific species or variety.

**Hedging** – using commodity futures to stabilize the value of a commodity.

**Heifer** – a young female bovine, normally before having her first calf, or prior to weaning her first calf.

**Herbicide** – a chemical used to control weeds.

**Heterosis** – a genetic phenomenon in crossbreeding that results in the offspring having greater size, strength and growth rate than the average of its parents. It is also known as “Hybrid vigour.”

**Hybrid vigour** – see “Heterosis.”

**Insecticide** – a chemical used to control insects.

**Kid** – a young (immature) goat.

**Kindle** – the act of giving birth to rabbits.

**Kit** – a young rabbit from birth to weaning.

**Lactation** – the period of time when an animal produces milk.

**Lamb** – a young sheep.

**Leaching bed** – part of a septic system consisting of a tile grid for disposal of household wastewater.

**Litter** – the number of piglets/kits born to a sow/doe at one time.

**Major elements** – minerals that are required in relatively large amounts by plants and animals (e.g. calcium, phosphorus, potassium and sulphur). In plants, the three major elements are nitrogen, phosphorus and potassium.

**Market pig** – same as a finishing pig (animal ready for market).

**Minerals** – inorganic elements that have a specific function in plant and animal nutrition. For livestock, these are sometimes mixed with vitamins.

**Miticide** – an insecticide used to control mites.

**Nursery pig** – same as weaner.



**Oilseed** – a seed from which oil is extracted for commercial use e.g., canola, soybean, flax (linseed).

**Oilseed meal** – a high protein by-product from the extraction of oils from oilseeds. It is often used as a protein supplement for livestock feed. It is also known as “oilcake.”

**Pasture** – grassland used to graze livestock.

**Pasture species** – grasses and/or legumes that are grown for pasture use.

**Performance testing** – a program to evaluate the performance of livestock characteristics such as rate of weight gain or milk production.

**Pesticide** – a general term to include herbicides, insecticides, miticides and fungicides that kill, suppress, attract or repel pests.

**pH** – a measure of acidity or alkalinity. A measure of less than 7.0 on the scale indicates acidity; greater than 7.0 indicates alkalinity, and 7.0 is neutral.

**Piglet** – a young pig still not weaned.

**Polled** – a cow, sheep or goat that never grows horns.

**Poult** – a newly hatched turkey.

**Protein** – the nitrogen-containing portion of a feed. This is called “crude” or “total” protein. It is used by the animal to build and replace muscle tissue (see “Digestible protein”).

**Pullet** – an immature hen less than 19 weeks of age.

**Purebred** – an animal where parents are both of the same breed and that is registered in the herd book of the breed association or livestock registry.

**Quota** – the right to market a stated amount of certain farm products, as regulated by some marketing boards under the *Farm Products Marketing Act*.

**Rabbitry** – a rabbit farm or rabbit raising enterprise.

**Ram** – a male sheep.

**Ration** – all of the nutrients or feed eaten by an animal in a 24-hour period. It is also called “diet.” This is often used erroneously to describe a prepared feed mix such as a “dairy ration” or “growing ration.”

**Registered (pedigreed) livestock** – purebred livestock for which registration papers are available (see “Purebred” and “Grade”).

**ROP (Record of Performance)** – a term used in the past in reference to official performance-testing programs for animals.

**Rooster** – a mature male chicken (greater than 19 weeks of age).

**Roughage feed** – feed high in fibre and low in energy (e.g., corn silage and hay).

**Ruminant** – an animal with four compartments in its stomach (e.g., cattle, sheep, goats, bison and deer). Ruminants are able to effectively utilize feed containing a high proportion of roughage or fibre.



**Runoff** – that portion of surface water that flows across the land, carrying soil particles, plant residue and other materials until it is deposited onto flatter areas or into adjacent watercourses.

**Septic system** – a sanitary means of disposing of wastewater from rural homes. The system consists of a septic tank and a leaching bed (tile or weeping bed).

**Shrink** – an animal's weight loss during transportation; mostly urine and fecal matter.

**Sow** – a female pig having farrowed at least one litter.

**Steer** – a castrated bull.

**Stream buffer** – a strip of land planted with grass and/or trees along a watercourse that is intended to restrict the flow of surface water into the stream and prevent stream bank erosion. The buffer may be fenced to restrict livestock entry.

**Supplement** – a concentrated feed additive that is rich in proteins, vitamins and/or minerals, to be mixed with grains and other feed to balance the nutritional needs of livestock.

**Swine** – a collective term for all pigs. Swine farmers prefer to be called pork producers rather than swine or hog farmers.

**Systemic insecticide** – a product that controls parasitic insects on livestock by entering the animal's bloodstream.

**TDN (Total Digestible Nutrients)** – a measure of the energy value of a feed.

**Tillage** – an integrated set of practices from the time one crop is harvested until the next crop is planted that 'work' or disturb the soil with the purpose of preparing a seedbed. The amount of tillage and equipment used will depend on a set of goals such as reduced erosion, weed control and manure incorporation. Conventional tillage, conservation tillage and no-till are commonly used tillage systems.

**Thoroughbred** – a breed of horse. This term is not to be used to describe a "purebred" animal.

**Tom** – a male turkey.

**Trace elements** – minerals that are required in small quantities, but essential for plants and animal health, e.g. iron, magnesium, cobalt, etc. Sometimes called trace minerals or minor elements.

**Trunk pruning** – the act of trimming the branches from a tree trunk to ensure development of knot-free wood. Branches are pruned before they reach one inch in diameter.

**Water table** – the upper limit of the ground that is saturated with water. This changes with time of year, dryness of season and nature of the soil.

**Weaner** – a pig from age of weaning until 9–10 weeks of age.

**Weanling** – an animal recently weaned from its dam (mother). Term is mostly used with horses.

**Weeping bed** – see "Leaching bed".

**Wether** – a castrated ram.

**Yearling** – an animal that is approximately one year old.







# References and Resources

## Agricultural Inquiries and Ministry Contact Information

Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

Head Office location

1 Stone Rd. W., Guelph ON N1G 4Y2

OMAFRA Agricultural Information Contact Centre

Tel. 1-877-424-1300

Email: [ag.info.omafr@ontario.ca](mailto:ag.info.omafr@ontario.ca)

Website: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA)

### OMAFRA Publications

The Ontario Ministry of Agriculture, Food and Rural Affairs produces a wide range of publications and factsheets in addition to those suggested. Current publications and factsheets are listed in the OMAFRA online products catalogue. Go to [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on the "Publications" tab).

Publications can be ordered through ServiceOntario

Online at [www.ServiceOntario.ca/publications](http://www.ServiceOntario.ca/publications)

By phone through the ServiceOntario Contact Centre

Tel. 1-800-668-9938

TTY 1-800-368-7095

In person at ServiceOntario Centres throughout Ontario.

## Additional Resources in Alphabetical Order of Topic

### Agriculture, Food and Rural Organizations

A list of organizations is published on the OMAFRA website: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "List of Agriculture, Food and Rural Organizations" under Quick Links)

### Agricultural and Rural Statistics

Statistics on the OMAFRA website: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "Statistics" under Quick Links)

Statistics Canada websites: [www.statcan.ca/english/services/](http://www.statcan.ca/english/services/)

Census of Population: [www12.statcan.gc.ca/census-recensement/index-eng.cfm](http://www12.statcan.gc.ca/census-recensement/index-eng.cfm)

### Alternative Crops

OMAFRA specialty crop information: [www.ontario.ca/crops](http://www.ontario.ca/crops)



### Alternative Livestock

OMAFRA alternative livestock information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

**Bison:** Canadian Bison Association website: [www.canadianbison.ca/producer/index.htm](http://www.canadianbison.ca/producer/index.htm)

National Bison Association: [www.bisoncentral.com](http://www.bisoncentral.com)

**Deer and Elk:** Canadian Cervid Alliance: [www.cervid.ca](http://www.cervid.ca)

Farming Wapiti and Red Deer, Haigh, Jerry C. & Hudson, Robert J.,  
ISBN 0-8016-6787-9

**Rabbits:** Ontario Rabbit: [www.ontariorabbit.ca](http://www.ontariorabbit.ca)

Rabbit Production, Eight Edition, McNitt, James I., Patton, Nephi M., Cheeke,  
Peter R. & Lukefahr, Steven D., ISBN 0-8134-3167-0

**Fishing Farming (Aquaculture):** Alma Aquaculture Research Station:  
[www.aps.uoguelph.ca/~aquacentre/](http://www.aps.uoguelph.ca/~aquacentre/)

### Animal Health and Welfare

OMAFRA animal health and welfare information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Farm Animal Council: [www.ofac.org](http://www.ofac.org)

Ontario Society for the Prevention of Cruelty to Animals: [www.ontariospca.ca](http://www.ontariospca.ca)

Livestock Behaviour, Design of Facilities and Humane Slaughter, Dr. Temple Grandin:  
[www.grandin.com](http://www.grandin.com)

### Beef Cows and Cattle

OMAFRA beef information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Beef Improvement Ontario: [www.biobeef.com](http://www.biobeef.com)

Forage Beef: [www.foragebeef.ca](http://www.foragebeef.ca)

Ontario Cattlemen's Association: [www.cattle.guelph.on.ca](http://www.cattle.guelph.on.ca)

### Budgets and Cost of Production

OMAFRA production information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

OMAFRA publications and factsheets available through ServiceOntario:

- *Preparing Business Plans*
- *Ontario Farm Record Book (2004)* (Publication 540)
- *Field Crop Budgets* (Publication 60)
- *Farm Financial Analysis and Planning Workbook* (Publication 37)

### Business Structure and Plans

OMAFRA business structure information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

OMAFRA factsheets available through ServiceOntario:

- *Preparing Business Plan*
- *Evaluating the Feasibility of Business Opportunities*
- *Developing a Marketing Plan*
- *Developing an Agri-Tourism Operation in Ontario*



**Dairy Cattle**

OMAFRA dairy information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Dairy Farmers of Ontario: [www.milk.org](http://www.milk.org)

**Deadstock**

OMAFRA publications available through ServiceOntario:

- *Best Management Practices Series: Deadstock Disposal* (Publication BMP22)

**Drainage**

OMAFRA drainage information: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "Environment" under Topics)

OMAFRA publications and factsheets available through ServiceOntario:

- *Agricultural Drainage Licensing*
- *Drainage Guide for Ontario 2007 Edition* (Publication 0029E)

**Environmental Farm Plan**

Canada-Ontario Environmental Farm Plan website: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "Environment" under Topics)

Ontario Soil and Crop Improvement Association: [www.ontariosoilcrop.org](http://www.ontariosoilcrop.org)

**Farm Business Registration and Farmland Property Tax Programs**

OMAFRA Farm Property Class Tax Rate Program: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "Farm Property Tax Rate Program" under Quick Links)

Agricorp: [www.agricorp.com/en-ca/Programs/FBR/Pages/Overview.aspx](http://www.agricorp.com/en-ca/Programs/FBR/Pages/Overview.aspx)

**Federal Taxes**

Canada Revenue Agency: [www.cra-arc.gc.ca/](http://www.cra-arc.gc.ca/)

**Field Crops**

OMAFRA publications available through ServiceOntario:

- *Agronomy Guide for Field Crops* (Publication 811)
- *Best Management Practices Series: Field Crop Production* (BMP02)
- *Field Crop Production Guide* (Publication 812)
- *Field Pocket Guide – A Practical Tool to Record Crop Management Activities* (Publication 820)
- *Field Crop Budgets* (Publication 60)

**Food Safety and Traceability**

OMAFRA Food Safety and Traceability information: [www.ontario.ca/foodsafety](http://www.ontario.ca/foodsafety)

**Foodland Ontario**

Foodland Ontario website: [www.foodland.ca](http://www.foodland.ca)



### Forages

OMAFRA publications and factsheets available through ServiceOntario:

- *Forage Production* (Publication 30)
- *Pasture Production* (Publication 19)
- *Pasture Legumes Identified*

### Forested Land

OMAFRA publications available through ServiceOntario:

- *Best Management Practices: Farm Forestry and Habitat Management* (BMP01)

Links to forest-related websites in Canada: [www.canadian-forests.com/](http://www.canadian-forests.com/)

Ontario Forestry Association: [www.oforest.ca](http://www.oforest.ca)

Ontario Ministry of Natural Resources: [www.ontario.ca/mnr](http://www.ontario.ca/mnr)

### General Farm Organizations

Christian Farmers Federation of Ontario: [www.christianfarmers.org](http://www.christianfarmers.org)

Ontario Federation of Agriculture: [www.ofa.on.ca](http://www.ofa.on.ca)

National Farmer's Union (Ontario): [www.nfuontario.ca](http://www.nfuontario.ca)

### Goats

OMAFRA goat information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Goat Breeders Association: [www.ogba.ca](http://www.ogba.ca)

### Grain Crops

Eleview: [www.eleview.ca](http://www.eleview.ca)

Grain Farmers of Ontario: [www.gfo.ca](http://www.gfo.ca)

### Greenhouses

OMAFRA publications available through ServiceOntario:

- *Growing Greenhouse Vegetables in Ontario* (Publication 836)
- *Crop Protection Guide for Greenhouse Vegetables* (Publication 835)

### Horses

OMAFRA horse information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Equestrian Federation: [www.horse.on.ca](http://www.horse.on.ca)

### Horticulture Crops

OMAFRA crop information: [www.ontario.ca/crops](http://www.ontario.ca/crops)

Establishment and Production Costs for Tender Fruit in Ontario: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

Establishment and Production Costs for Grapes in Ontario:  
[www.grapegrowersofontario.com/thegrowers/documents/2009GrapeCostofProduction\\_000.pdf](http://www.grapegrowersofontario.com/thegrowers/documents/2009GrapeCostofProduction_000.pdf)

Ontario Soil and Crop Improvement Association: [www.ontariosoilcrop.org](http://www.ontariosoilcrop.org)

Innovative Farmers Association of Ontario: [www.ifao.com](http://www.ifao.com)





## Leases

OMAFRA leasing information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

OMAFRA factsheets available through ServiceOntario:

- *Leasing Farm Equipment*
- *Land Lease Arrangements*
- *Crop Share Lease Agreements*
- *Flexible Cash Lease Agreements*
- *Cash Lease Agreements for Cropland*
- *Pasture Lease Agreements*
- *Lease Agreements for Farm Buildings*

## Livestock

OMAFRA livestock information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

OMAFRA animal health and welfare information: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "Food" under Topics)

List of livestock organizations: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA) (click on "List of Agriculture, Food and Rural Organizations" under Quick Links)

Ontario Farm Animal Council: [www.ofac.org](http://www.ofac.org)

## Managing Farm Labour

OMAFRA human resources information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

OMAFRA factsheets available through ServiceOntario:

- *Canada Pension Plan*
- *Creating and Implementing a Human Resource Management Plan*
- *Paying Wages to Farm Family Members*

Canada Pension Plan (CPP): [www.servicecanada.gc.ca/eng/isp/cpp/cpptoc.shtml](http://www.servicecanada.gc.ca/eng/isp/cpp/cpptoc.shtml)

Custom Work Rates survey: available at OMAFRA field offices or on website

Employment Insurance (EI): [www.servicecanada.gc.ca/eng/ei/menu/eibome.shtml](http://www.servicecanada.gc.ca/eng/ei/menu/eibome.shtml)

Human Resources Management for Employers: [www.hrmanagement.gc.ca](http://www.hrmanagement.gc.ca)

Ministry of Labour – *Occupational Health and Safety Act* Information for Farming Operations: [www.labour.gov.on.ca/english/hs/pubs/farming/](http://www.labour.gov.on.ca/english/hs/pubs/farming/)

Ontario Farm Safety Association: [www.fsai.on.ca](http://www.fsai.on.ca)

Ontario Ministry of Labour: [www.labour.gov.on.ca](http://www.labour.gov.on.ca)

Workplace Safety and Insurance Board: [www.wsib.on.ca](http://www.wsib.on.ca)



### Managing Risk

OMAFRA publications available through ServiceOntario:

- *Managing Commodity Price Risk Using Hedging and Options*

Agricorp: [www.agricorp.com](http://www.agricorp.com)

### Marketing

OMAFRA marketing information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

OMAFRA factsheets available through ServiceOntario:

- *Managing Risk on Farms Open to the Public*
- *Developing a Marketing Plan*
- *Developing an Agri-Tourism Operation in Ontario*

Social Media Marketing (Factsheet 014750) or downloadable PDF

at [www.ontariocanada.com/ontcan/1medt/smallbiz/sb\\_downloads/ebiz\\_social\\_media\\_marketing\\_en.pdf](http://www.ontariocanada.com/ontcan/1medt/smallbiz/sb_downloads/ebiz_social_media_marketing_en.pdf)

Farmers Markets Ontario: [www.farmersmarketsontario.com](http://www.farmersmarketsontario.com)

Ontario Farm Fresh Marketing Association: [www.ontariofarmfresh.com](http://www.ontariofarmfresh.com)

Ontario Marketing Boards contact information: [www.ontario.ca/OMAFRA](http://www.ontario.ca/OMAFRA)

Sell What You Sow! The Grower's Guide to Successful Produce Marketing, Gibson, Eric L., New World Publishing, 1994.

### Naming Your Business

ServiceOntario Services for Businesses: [www.ontario.ca/en/services\\_for\\_business/STEL02\\_039990](http://www.ontario.ca/en/services_for_business/STEL02_039990)

### New Entrants/Farmers

OMAFRA new farmer and succession planning information: [www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

FarmStart: [www.farmstart.ca](http://www.farmstart.ca)

FarmLINK: [www.farmLINK.net](http://www.farmLINK.net)

### Nursery and Landscape Plants

OMAFRA publications available through ServiceOntario:

- *Nursery and Landscape Plant Production and IPM* (Publication 383)

Resources on OMAFRA website:

- Starting a Commercial Nursery in Ontario: [www.ontario.ca/crops](http://www.ontario.ca/crops) (click on "Nursery and Landscape" under Specialty Crops)

Nursery Management, Davidson, H., Peterson, C. and Mecklenburg, R., 1994

Modern Arboriculture, Shigo, A.L., 1991. Shigo and Trees Associates, Durham, N.H.

## Organic Farming

OMAFRA organic agriculture web pages [www.ontario.ca/organic](http://www.ontario.ca/organic)

OMAFRA factsheets available through ServiceOntario:

- *Introduction to Organic Farming*
- *Starting an Organic Farm*
- *Transition to Organic Crop Production*

Organic Council of Ontario: [www.organiccouncil.ca](http://www.organiccouncil.ca)

Canadian Organic Growers: [www.cog.ca](http://www.cog.ca)

Ecological Farmers Association of Ontario: [www.efao.ca](http://www.efao.ca)

## Pest Management

OMAFRA pest management information: [www.ontario.ca/crops](http://www.ontario.ca/crops)

OMAFRA publications available through ServiceOntario:

- *Best Management Practices: Integrated Pest Management (BMP09)*
- *Best Management Practices: Pesticide Storage, Handling and Application (BMP13)*

## Pigs

OMAFRA swine information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Pork: [www.ontariopork.on.ca](http://www.ontariopork.on.ca)

## Poultry

OMAFRA poultry information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

OMAFRA publications available through ServiceOntario

- *Biosecurity Recommendations for Commercial Poultry Flocks in Ontario*
- *Biosecurity Recommendations for Small Flock Poultry Owners*

Chicken Farmers of Ontario: [www.ontariochicken.ca](http://www.ontariochicken.ca)

Egg Farmers of Ontario: [www.getcracking.ca](http://www.getcracking.ca)

Ontario Broiler Hatching Egg and Chick Commission: [www.obbecc.com](http://www.obbecc.com)

Small flock management information: [www.healthybirds.ca](http://www.healthybirds.ca)

Turkey Farmers of Ontario: [www.ont-turkey.on.ca](http://www.ont-turkey.on.ca)

## Sheep

OMAFRA sheep information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Sheep Marketing Agency: [www.ontariosheep.org](http://www.ontariosheep.org)



### Soil and Crops

OMAFRA soil management information: [www.ontario.ca/crops](http://www.ontario.ca/crops)

OMAFRA publications and factsheets available through ServiceOntario:

- *Agronomy Guide for Field Crops* (Publication 811)
- *Best Management Practices Series: Field Crop Production* (BMP02)
- *Best Management Practices Series: Managing Crop Nutrients* (BMP20)
- *Field Crop Protection Guide* (BMP812)
- *Field Pocket Guide – A Practical Tool to Record Crop Management Activities* (Publication 820)
- *Field Crop Budgets* (Publication 60)
- *Nutrient Management Act: Liquid Manure Removal from Storage*
- *Nutrient Management Act: Winter Application of Manure and Other Agricultural Source Materials*
- *Soil Fertility Handbook* (Publication 611)

Soil Maps from Agriculture and Agri-Food Canada:

<http://sis.agr.gc.ca/cansis/publications/on/index.html>

Soil Foodweb Canada: [www.soilfoodweb.ca](http://www.soilfoodweb.ca)

### Veal Calves

OMAFRA veal information: [www.ontario.ca/livestock](http://www.ontario.ca/livestock)

Ontario Veal Association: [www.ontarioveal.on.ca](http://www.ontarioveal.on.ca)

### Waste Disposal

OMAFRA factsheets available through ServiceOntario:

- *Agriculture Composting Basics*

### Water Management

OMAFRA water management information: [www.ontario.ca/crops](http://www.ontario.ca/crops)

[www.ontario.ca/crops/english/environment/water.htm](http://www.ontario.ca/crops/english/environment/water.htm)

OMAFRA publications and factsheets available through ServiceOntario:

- *Best Management Practices: Water Management* (BMP07)
- *Best Management Practices: Irrigation Management* (BMP08)
- *Best Management Practices: Water Wells* (BMP12)
- *Locating Existing Water, Gas or Oil Wells*

Ministry of the Environment, Water Well Records Search Line – Tel: 1-888-396-9355

### Weeds

OMAFRA weed management information: [www.ontario.ca/crops](http://www.ontario.ca/crops)

Ontario Weeds – Weed Gallery (formerly Publication 505; available only electronically):

[www.ontario.ca/crops](http://www.ontario.ca/crops) (click on weeds)

OMAFRA publications available through ServiceOntario:

- *Guide to Weed Control* (Publication 75)



**Woodlots**

OMAFRA publications available through ServiceOntario:

- *Best Management Practices: Agroforestry Series Volume One – Woodlot Management* (BMP18)

Ontario Woodlot Association: [www.ont-woodlot-assoc.org](http://www.ont-woodlot-assoc.org)

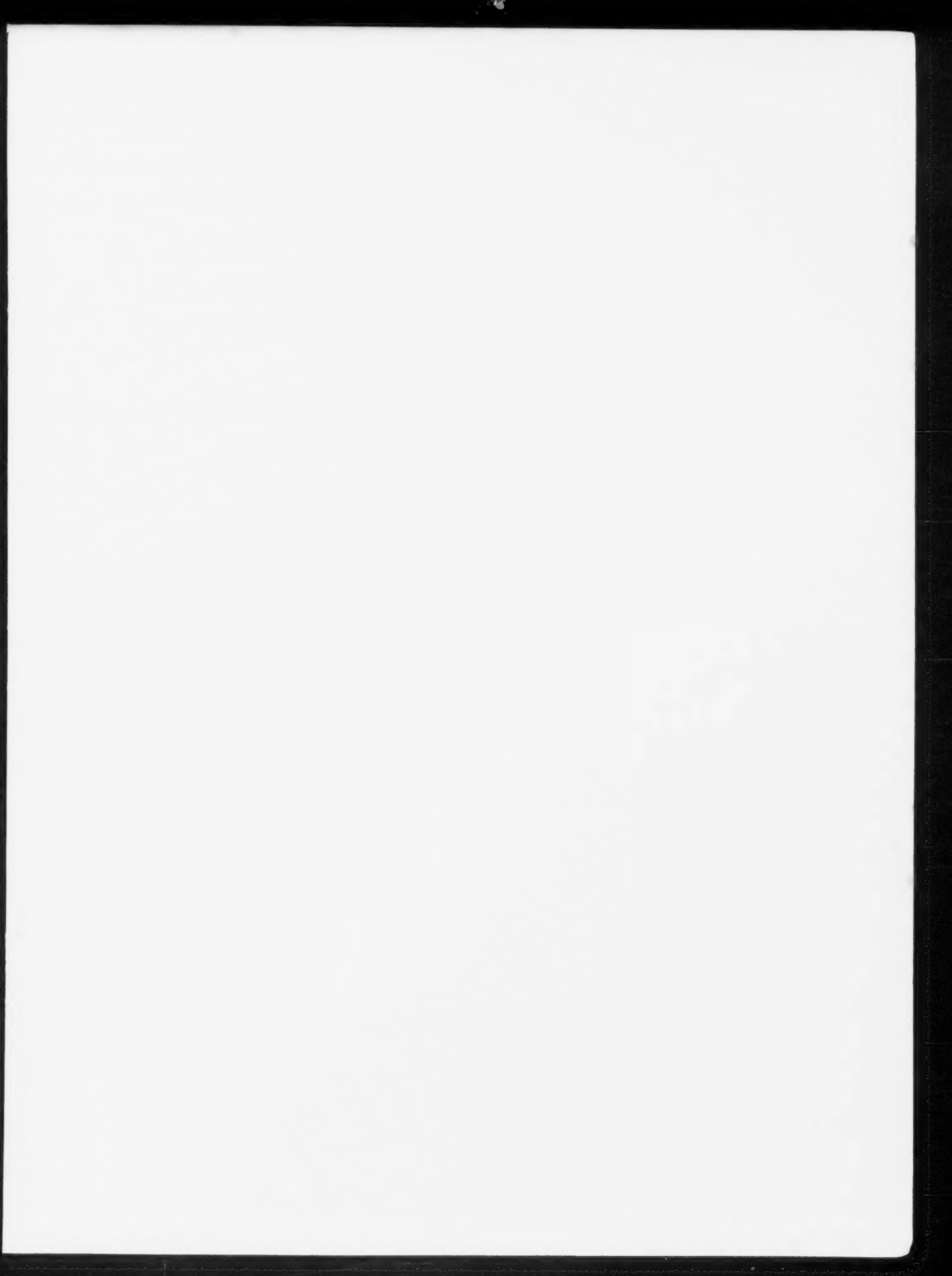
Ontario Forestry Association: [www.oforest.ca](http://www.oforest.ca)

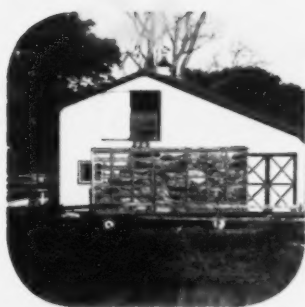
Landowner Resource Centre: Extension Notes: [www.lrconline.com](http://www.lrconline.com)











[www.ontario.ca/agbusiness](http://www.ontario.ca/agbusiness)

